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ABSTRACT

This handbook for Adult Basic Education (ABE) and General Educational Development (GED) instruction synthesizes research and combines it with selected instructional strategies for instructors, tutors, and volunteers. This handbook is a reference tool that sets the scene for instruction in literacy and adult basic education. The handbook includes the following six sections: (1) adult learner--characteristics, retention and motivation, learning styles, learning disabilities, and cultural considerations; (2) reading--beginning readers, intermediate readers, content area reading, and study skills; (3) mathematics--standards for ABE/GED instruction; (4) three stages of the writing process; (5) classroom management--multilevel classes and cooperative learning; and (6) the GED test overview and test-taking strategies. Within each section, instructional strategies and tips for teachers are graphically highlighted. Selected resources are identified at the end of each section for more information. Eight appendices are included: professional organizations and publications; acronyms; perceptual styles inventory; GED information; GED regional superintendent offices; Fry Readability; Adult Learning Resource Center (ALRC) information; and ALRC publication order form. (NLA)

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# TEACHERS, TOOLS & TECHNIQUES

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## A Handbook for Adult Basic Education and GED Instruction

Prepared by:

Sandra L. Koehler, Consultant
Marcia E. Mulloy, Consultant
Dennis Terdy, Director

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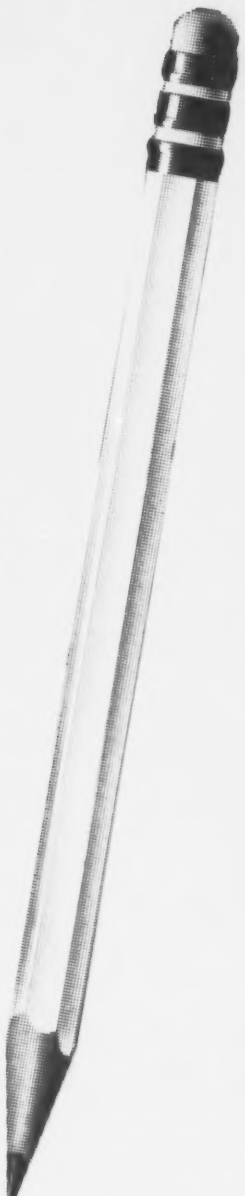

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# TEACHERS, TOOLS & TECHNIQUES: A HANDBOOK FOR ADULT BASIC EDUCATION AND GED INSTRUCTION

TABLE OF CONTENTS


PREFACE ..... i

ACKNOWLEDGMENTS ..... ii

ADULT LEARNER
- Characteristics ..... 1
- Retention and Motivation ..... 5
- Learning Styles ..... 9
- Learning Disabilities ..... 13
- Cultural Considerations ..... 19

READING
- Beginning Readers ..... 21
- Intermediate Readers ..... 27
- Content Area Reading ..... 33
- Study Skills ..... 41

MATHEMATICS
- Standards for ABE/GED Instruction ..... 45

WRITING
- Three Stages of the Writing Process ..... 55

CLASSROOM MANAGEMENT
- Multilevel Classes ..... 67
- Cooperative Learning ..... 75

THE GED TEST
- Test Overview ..... 79
- Test Taking Strategies ..... 93

APPENDIX
- Professional Organizations and Publications ..... 95
- Acronyms ..... 97
- Perceptual Styles Inventory ..... 98
- GED Information ..... 100
- GED Regional Superintendent Offices ..... 101
- Fry Readability ..... 102
- Adult Learning Resource Center Information ..... 103
- ALRC Publication Order Form ..... 104

# PREFACE

In *Teachers, Tools, and Techniques: A Handbook for Adult Basic Education and GED Instruction,* Sandra Koehler and Marcia Mulloy have synthesized a wide variety of research and combined it with selected instructional strategies specifically for instructors, tutors, and volunteers involved in ABE and GED instruction.

This handbook is designed as a reference tool to *set the scene* for instruction in literacy and adult education. Included are basic reading techniques, mathematics curriculum standards, an overview of the GED examination, and classroom management tips. Selected resources have also been identified at the end of each section for those who would like more information. Within each section "Instructional Strategies" and "Tips for Teachers" have been graphically highlighted.

This handbook can be used as a topical guide for those who are looking for information in particular topics, such as multilevel classes, learning styles, or retention and motivation.

I hope you find this a useful tool in your instructional program.

Dennis Terdy, Director
Adult Learning Resource Center
Adult Education Service Center of Northern Illinois
1992

# ACKNOWLEDGMENTS

This handbook has been a longtime goal of the Adult Education Service Center of Northern Illinois staff. Because of the nature of the adult education field with many part-time teachers, tutors, and volunteers, with limited resources, and limited time for instructional planning, we became aware of the need for a quick resource for all areas of literacy, ABE, and GED instruction.

Special thanks need to be expressed to fellow educators and members of our staff for their support and contributions in producing this publication. Thank you to the editors, Catherine Porter, Elizabeth Minicz, and Judith Diamond, for their expertise and generous donation of time. Thank you to Carolyn Wissmiller and Jan Phillips for their mathematics contributions, to Tess Reinhard for her help in the writing section, and Susan Vogel for her assistance with the learning disabilities section.

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Sandra L. Koehler
Marcia E. Mulloy
Dennis Terdy
Adult Education Service Center of Northern Illinois

# ADULT LEARNER

# CHARACTERISTICS OF ADULT LEARNERS

Adult learners are individuals 18 years of age and older who are responsible for directing their own lives. Although there is no typical adult learner, certain general characteristics have been identified that have important implications for adult educators. Creating a learning environment that meets the needs of adult learners is a key factor in any successful ABE/GED program. This section will look briefly at five characteristics of adult learners and their implications for classroom instruction.

## PRACTICAL LIFE EXPERIENCE

Adults come to the classroom with rich life experiences. These experiences and the insights they represent form an excellent base upon which to gain additional knowledge.

Recognizing this, instructional materials must be adult oriented and reflect the background and concerns of adult learners.

## RELEVANT LEARNING

Adults have many roles to play (e.g., parents, employees, community members) in addition to that of learner. Adult learners are often very busy people. For these reasons, they seek education that will provide practical information or skills to meet the challenges of their everyday lives. They desire instruction that is immediately applicable to their lives--and they want to gain such information and skills as quickly as possible.

For most adult learners, attendance in ABE/GED programs is voluntary. The decision to return to school is generally motivated by some life change or a need to develop new skills or knowledge. As a result, adult learners approach the ABE/GED classroom with an idea of what they want or need to learn and often drop out of programs that do not meet their expectations.

Instructors should conduct a needs assessment to determine their students' educational goals. Lessons should then be built around these specific learning goals. When adults see the relevance of instruction, their motivation to learn is generally high.

## SELF-DIRECTED LEARNING

Most adults are accustomed to making decisions about their own lives. They are treated as adults in their everyday life and want to be treated as adults in the classroom as well. Instructors of adult learners, therefore, should allow their students to retain as much independence as possible. Instructors should share decision making with their students and actively involve them in the learning process. Adult learners, for example, can take an active role in deciding course content and classroom management guidelines.

## DEVELOPMENT OF SELF-CONCEPT

Many adults returning to formal educational settings experience fear and uncertainty. Often they have had negative experiences with previous schooling. In addition, they may lack confidence in their ability to learn after being away from school for a period of time. Adult learners need reassurance that they can succeed in the ABE/GED classroom. Instructors should strive to create a success-oriented classroom where learning is enjoyable and rewarding. To insure success, instructors should help students set short-term, attainable goals. Immediate and continuous feedback on progress toward these goals will also help adult learners develop positive self-concepts.

## LIFE-LONG LEARNING (OLDER LEARNERS)

Individuals can learn throughout their lives. Older adults in the ABE/GED classroom, however, have special emotional and physical needs. Many doubt their ability to learn new things and therefore need extra encouragement and practice when engaging in learning activities. Older learners often require more time to work on tasks than younger students.

Many older adults also experience decreased auditory or visual ability. Instructors need to be sensitive to these physical needs and accommodate them whenever possible. For example, speaking loudly and clearly and repeating questions from the group before answering will help accommodate hearing-impaired learners. Writing clearly in large letters on the chalkboard will help visually-impaired learners. It is also important to make sure that any printed material used in class is easy to read.

Once older learners have adjusted to the ABE/GED classroom, they are often among the most vital and enthusiastic learners. In addition, older learners are a valuable reservoir of experience that can enrich the learning of all involved.

Tips for Teachers of Adult Learners:

- help students clarify their personal, professional, and educational goals
- view adult learners as active participants in their own education
- recognize that anxieties (e.g., fear of returning to school, concern about the GED test) may inhibit learning
- encourage socialization through informal group discussions and coffee breaks so that students realize that their feelings are not unique
- provide positive reinforcement whenever possible (but avoid *false* praise)
- deal with learners' academic and personal problems in private
- plan instruction to allow for different learning rates and goals (i.e., individualize instruction as much as possible)
- provide for non-threatening forms of learner-administered evaluation and feedback (e.g., self-correcting exercises, homework)
- avoid busywork; allow students to focus instead on developing skills relevant to their lives
- avoid basing in-class work solely on previous homework
- bring several copies of past handouts to each class for those who have been absent
- minimize child-oriented classroom procedures (e.g., hand raising)

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# RETENTION AND MOTIVATION

Retention is an ongoing concern of adult educators. The two questions most often asked by practitioners are:

1. Why do adult students drop out?

2. What strategies can be used to reduce dropout rates?

Adult participation in adult education is generally voluntary. It has often been said that adults vote with their feet. If an adult does not feel vested in a program, sees no immediate reward or gain, or lacks tangible evidence of progress, adult education practitioners will have to work hard to keep him/her in class.

As classroom teachers you need to be aware of:

- who is participating in your programs
- why they are participating
- what students need/want to learn
- what barriers to participation are likely to affect class attendance
  -personal problems
  -transportation needs
  -child-care needs
  -conflicts with work schedules
  -low self-esteem

## SUGGESTIONS FOR RETENTION

It is of paramount importance that instructors know their subject matter thoroughly. Adequate time needs to be spent in preparation and materials used should reflect the needs of the adult learner. Methods and materials used should provide opportunity for supportive evaluation and feedback to students.

As a classroom teacher you can promote retention by:

- making students feel like part of the group
- checking to see that students are comfortable, both physically and mentally
- keeping a positive, supportive, caring attitude
- helping students set goals
- contacting students who are missing

## INSTRUCTIONAL STRATEGIES

First impressions are important:

- greet students at the door as they arrive
- write each student's name on a card, shuffle the cards and distribute them in pairs. Have the adults in each twosome interview each other. After the interviews, have each student introduce his/her partner and tell what he/she learned about him/her during the interview
- encourage students to help each other rather than compete
- don't spend too much time telling what you plan to do. Give a quick rundown of overall goals of the class. Get right to work!
- make the first lesson practical. Provide the student with a new skill or a piece of usable knowledge

Promote attendance:

- send congratulatory notes for enrolling
- give frequent progress reports
- phone absent students
- mail *We missed you* cards

Give students a chance to be successful:

- remember the desire to learn is deadened by too many failures
- provide short units of work to give students a feeling of success
- give approval promptly when students are successful
- clearly state goals, expectations, and skills for each session
- let students know you like and enjoy working with them
- be moderate with criticism

Deal with the whole person:

- encourage adult learners to be partners in their own education
- discuss what the group expects and wants to learn (incorporate group goals into lesson plans)
- show students you respect them as individuals
- be willing to learn from your students

Motivate students:

- help students set individual short-term goals
- help students explore ways to achieve goals
- discuss barriers that may block goal attainment
- brainstorm solutions to goal obstructions
- encourage *possibility* thinking
- use adult-oriented materials
- use materials that are keyed to the specific needs and interests of students

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# LEARNING STYLES

Individuals learn in different ways. This diversity among people is called learning styles. Learning styles are as unique as fingerprints and differ according to who we are, where we are, how we see ourselves, what we pay attention to, and what people ask and expect of us. Recognizing and dealing with these individual learning styles can be a challenge for teachers. Teachers who are aware of learning style differences and provide for a variety of learning styles in their lessons often see a marked improvement in student learning.

A variety of factors account for learning style differences. Some of these factors are inherited while others are learned. Though we cannot explain all learning style differences, there are two areas which seem to be of particular significance for instruction and learning: perceptual styles and information processing styles. Perceptual styles focus on how we use our senses to gather information about our environment. Processing styles focus on how we organize and use this information to solve the problems of daily life.

## PERCEPTUAL STYLES

Perceptual style refers to how individuals gather information about their world. It is how we know what we know. This information is gathered through the senses of hearing, seeing, touching, smelling, and feeling. As learners we may tend to rely more on one sense than another. Within any given classroom some students learn best by watching (visual learners); others learn best by hearing (auditory learners); and others learn best by doing (tactile/kinesthetic learners).

Visual learners learn by seeing and imagining. They remember what they see and prefer to have such information as directions written down. Organizing information into chart, graph, and map form helps visual learners remember important details.

Auditory learners learn best by listening and verbalizing. Students who prefer to use their ears to learn have little difficulty remembering spoken information. Discussing information helps them focus on and remember important details.

Tactile/kinesthetic learners learn by doing things for themselves. They are *hands-on* people who like direct involvement. Writing ideas down or creating diagrams helps these individuals organize and remember information. Students who learn best through movement and touch need freedom to move about while learning (e.g. moving from desk to chalkboard or other areas of the classroom).

## INSTRUCTIONAL STRATEGIES FOR PERCEPTUAL STYLES

Students who have an understanding of their learning style are better able to develop effective learning strategies (See Appendix III, page 98, for Perceptual Styles Inventory). An auditory learner, for example, might develop the strategy of reading out loud and then recording key information for review at a later date.

Teachers should help students become aware of different learning styles but should not focus instruction on any one style. Instruction should be broad enough to appeal to all students' learning styles. When giving directions, for example, instructors might write the directions on a chalkboard or overhead (visual), read or discuss the directions pointing out key points (auditory), have students write directions in a step-by-step outline (tactile/kinesthetic).

Tips for teachers:

- present information in visual and verbal form
- provide opportunity for group discussion
- provide opportunity for writing (i.e. completing a chart, diagraming information)
- provide opportunity for movement (i.e. changing seats, going to chalk board)
- encourage students to rewrite and/or restate material in their own words.

## PROCESSING STYLES

Processing style refers to how individuals organize and think about perceptual information. Processing styles have important implications for how individuals apply what they have learned to the problems of daily life. Processing can be looked at in terms of: 1) global learners, 2) analytical learners, 3) impulsive learners, and 4)reflective learners. Most people are a combination of all four of the above processing styles. Each individual, however, tends to feel more comfortable processing information in some ways than in others. The most comfortable way of organizing and thinking about information represents the individual's processing style.

Global learners need to look at the overall concept first and then break down the information into specifics. They want to chunk ideas together, so they can see the big picture. Global learners learn through watching, listening, and discussing. They learn best when material is relevant to their own experience.

Analytical learners prefer facts and details. They like information presented in small sequential steps. Analytical learners prefer to learn on their own and tend to want to know what experts think.

Impulsive learners enjoy self-discovery and like new experiences. They learn by trial and error, relishing change. Impulsive learners tend to need more flexibility than is often found in traditional classrooms.

Reflective learners tend to be cautious in their approach to learning. They are skills oriented and like to learn things that have a practical use. Reflective learners like clear-cut and concise ideas. They thrive on plans and time lines and tend to do well in traditional classroom settings.

## INSTRUCTIONAL STRATEGIES

All four styles of learning are equally valuable. Each has its own strengths and weaknesses. Instruction needs to include all four processing styles. This allows students an opportunity to be successful while encouraging them to stretch and develop new learning skills. Teaching through the use of all four learning styles also helps students learn to adapt their learning strategies to other peoples' style.

Tips for teachers:

- allow students a choice of working in pairs or alone
- provide for self-pacing (students can work on the same topic at different levels and different rates)
- provide a variety of materials and texts (no one set of workbooks or teaching methods is right for all students)
- encourage students to learn from each other
- teach study strategies that encompass all four styles of processing

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# LEARNING DISABILITIES (LD)

Adults learn through a variety of modalities or sensory channels: seeing, hearing, touching, and moving. Sensory information is processed through the central nervous system where meaning is attached to it. These separate bits of meaning are then organized through association with previously learned information and filed into the memory. Information stored in the memory is then available for retrieval.

When there is a disruption in this process, learning disabilities arise. *Learning disability* is a generic term, referring to a wide variety of learning problems that vary in nature and severity. Adults with learning disabilities may have difficulty learning despite the fact that they have average or above average intelligence. Learning disabled adults are capable of learning, but may require specialized instruction.

## DIAGNOSING LEARNING DISABILITIES

Due to the complex nature of the learning process, diagnosis of learning disabilities should be done *ONLY* by trained professionals. The following pages detail characteristics of adult learners with various kinds of learning disabilities and provide practical advice for teaching such learners. Classroom instructors can use this information to:

- recognize characteristics of learning disabled adults so they can refer students exhibiting these characteristics for professional evaluation;
- individualize instruction for learners who have already been diagnosed as learning disabled.

Instructors should contact their program directors for information on referring students for professional LD testing. Their own institution may have resources available, or students may be referred to either their local school districts or the state department of rehabilitation for testing.

## COMMON TYPES OF LEARNING PROBLEMS

Information is learned through the sensory channels of sight, hearing, moving, and touch. Each of us has a preferred channel through which we tend to process information. Learning disabled adults often find it difficult to process information through one of these channels. The brain seems consistently unable to process information through the weak sensory channel.

Students with learning disabilities have strengths as well as deficits. It is important to recognize and utilize individual strengths and to teach through students' preferred sensory channels.

Instructors can perhaps best meet the needs of students by using a multisensory approach in their teaching. The goal of multisensory instruction is to increase the number of senses through which learning can occur. Such an approach is ideal for the wide range of learning preferences that can be found in any ABE/GED classroom. In addition, multisensory instruction allows learning disabled adults to learn through their strong sensory channels while participating in mainstream ABE/GED classes.

The following pages will identify some of the characteristics of students with auditory and visual deficits. No one individual will exhibit all (or even most) of the characteristics listed for each kind of sensory deficit. Practical teaching tips are given to help instructors adapt their teaching to their students' strong modalities.

## AUDITORY PERCEPTION

Auditory perception is the process of extracting meaning from what is heard. Learners with auditory deficits have difficulty taking in and using information that is received through the sense of hearing. Although such learners *hear* sounds within their environment, they may have difficulty interpreting the meaning of what they hear.

**Students with auditory deficits may have difficulty:**

- accurately processing spoken language (especially when instructors speak quickly)
- filtering out background noise
- hearing unaccented syllables
- interpreting speech inflections
- talking on the phone
- taking messages
- learning and applying phonics rules
- hearing or saying words with three or more syllables
- remembering what has been heard

Tips for teaching students with auditory deficits:

Students who have difficulty processing information through the auditory channel often use sight, touch, and movement as their primary method of gathering and organizing information. To help students learn through these channels, you can:

- face students when speaking
- slow down your rate of speaking
- use short, one-concept statements
- present information on the chalkboard, on an overhead projector, or through written handouts
- encourage students to visualize material that has been orally presented
- provide students the opportunity to touch and interact with materials that relate to ideas being presented
- encourage students to make diagrams, charts, and graphs of information
- encourage students to use a tape recorder to check oral information
- teach reading through a whole-word or sight-word approach rather than a phonics approach (For ideas on using phonics instruction with auditory-deficient students, see below.)

## VISUALLY-CUED PHONICS INSTRUCTION

Students with auditory deficits often find it difficult to learn and apply phonics rules. Adding a visual/motor element to phonics instruction allows students to use sight, movement, and touch--along with sound--to analyze and decode unknown words.

### How to use visually-cued phonics:

- using a crayon, print words in large letters on 3 x 5 index cards (crayon leaves a raised pattern that can be easily felt)
- when printing the words on the cards, color code the phonics pattern (e.g., if teaching the initial consonant "t", write the t's in a different color from the rest of the letters in the words)

- have students say each word while tracing it on the index cards with their fingers (they will be able to feel the crayoned letters)
- have students say each word while tracing it on the desk or tabletop with their fingers
- have students say and write each word from memory

## VISUAL PERCEPTION

Visual perception is the ability to notice visual details and concentrate on relevant visual stimuli. Learners who have difficulty processing what they see may have problems dealing with abstract, two-dimensional items such as numbers, letters, and pictures. In addition, visual perception deficits may affect motor coordination. Visual perception deficits may result in reading/writing and math computation difficulties.

**Learners with visual deficits may have these *reading/writing*-related problems:**

- trouble seeing differences between similar letters and numbers
- reversal or skipping of whole words while reading (i.e., "was" for "saw")
- poor sight vocabulary
- difficulty keeping place while reading
- imperfectly and/or inconsistently formed letters
- poorly organized print on the page (e.g., extreme slanting, starting at different points on the margin, etc.)

**Students with visual deficits may have these *math*-related problems:**

- difficulty with left-right orientation and spatial concepts
- writing numbers backwards and/or upside down
- tendency to reverse numbers when doing computations or when copying from book or chalkboard
- difficulty aligning numbers in columns

Tips for teaching students with visual deficits:

Students who experience problems processing visual information may learn best when verbal instruction accompanies visual information.

- keep visual information simple and uncluttered
- leave extra space between words, sentences, and lines when writing on the board or overhead projector or when preparing handouts
- encourage students to ask for clarification of visual information
- teach students strategies for simplifying visual information (e.g., have students make charts, graphs, pictures, or summarize information in their own words)
- encourage students to discuss ideas with other students
- encourage students to talk to themselves when trying to learn and remember information
- encourage students to talk through steps while solving problems
- have students outline papers verbally before writing
- teach reading through a phonics approach

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# CULTURAL CONSIDERATIONS

In recent years, nonnative speakers of English have been making up an increasingly large segment of ABE/GED classrooms. The five characteristics of adult learners discussed on pages 1 and 2 hold true for Limited English Proficient (LEP) adult students. However, LEP adults in ABE/GED classrooms have unique characteristics that instructors must recognize in order to help these students achieve their educational goals. This section will look at two areas that may affect nonnative speakers of English: the classroom and instructional materials.

## THE CLASSROOM

Many LEP adult learners come from cultures where the classroom is a very structured environment. In many cultures, learning involves a process of listening to a teacher lecture, taking notes, memorizing facts, and then reiterating the facts back in essay form. Classrooms are often teacher-centered, with little or no interaction between teachers and students or among students themselves. In addition, many cultures teach students to be quiet in the classroom and to respect their teachers; asking questions and talking in class are considered inappropriate, disrespectful behaviors.

For these reasons, many LEP students find the American classroom to be an unfamiliar and/or uncomfortable learning environment. Nonnative speakers of English may be:

- reluctant to speak in class
- resistant to working in pairs or groups with other students
- unfamiliar with multiple-choice tests

ABE/GED teachers need to be sensitive to these characteristics of their nonnative students. It is a good practice to introduce LEP students to group work in a gradual manner and to gently encourage (but not to force) verbal participation in class activities.

## INSTRUCTIONAL STRATEGIES

For many LEP adult learners, the ABE/GED classroom will be their first exposure to instructional materials written for native speakers of English. Materials designed for native speakers of English are usually grammatically complex and often rich in idiomatic expressions and colloquialisms. Materials written for English as a second language students, on the other hand, often control the complexity of the grammar and the use of idiomatic language. While idiomatic language poses few problems to native speakers of English, it is often a source of difficulty and confusion for LEP learners. Instructors will probably need to provide additional explanation and practice with such language for their nonnative speakers of English.

Too, the ABE/GED classroom may be an LEP learner's first experience with teachers who are not familiar with teaching ESL learners. To facilitate listening comprehension, instructors can:

- speak simply and clearly
- repeat main ideas in a variety of ways
- pause occasionally, encouraging students to clarify ideas or information presented
- use visual aids whenever possible to support the spoken word

Tips for Teachers of Nonnative Speakers of English:

- clearly define the goals of your class; let students know what is expected of them
- gently encourage students to take part in class discussions and group work, but don't force participation
- encourage students to ask questions to clarify course content and/or assignments
- inform students of any available support services (e.g., tutors, language laboratory, learning center, advisors) and encourage them to make use of these services

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# READING

# BEGINNING READERS

Learning to read is a complex process. It is influenced by a wide variety of physical, social, emotional, and intellectual factors. There are many methods for teaching reading, and each method seems to work with *some* students, but no one method is successful with all students. The key to a good reading program is flexibility. This is especially true for ABE/GED programs, where students come from diverse backgrounds and have a wide range of goals and skill levels.

Reading is an active, meaning-making process. Readers use what is in their heads (background knowledge and life experience, called *schema*) and what is on the page to make meaning of a text. Fortunately, adult learners have a wide range of life experiences that can enhance the reading process.

One way to understand the complex nature of reading is to look at what successful readers do when they read. Successful readers:

- use their background knowledge and experience to anticipate what they will be reading
- do not decode every word to sound
- read idea by idea, not word for word
- relate what they are reading to what they already know about the topic
- use various reading strategies (e.g., scanning, slowing down, taking notes) to improve understanding

Beginning reading instruction focuses on helping students develop the ability to match printed symbols with their verbal counterparts. For many people, this means phonics instruction (matching individual letters to their corresponding sounds). While understanding and applying phonics principles is an important reading strategy, the process of reading is much more than this. The ability to pronounce every word correctly within a text means little if readers do not understand what they are reading.

Foreign language students can learn to "sound out" words in a foreign language without knowing what the words mean. This can happen to beginning readers of English, too. Such "word calling" is not "reading". *Understanding*--not pronouncing--is the goal of reading instruction.

Poor readers tend to focus on pronouncing words. This focus on correctly pronouncing each printed word often inhibits beginning readers' ability to understand what they are reading. Rather than focusing on pronouncing words, beginning readers need to develop fluency in reading. Fluency is the ability to understand what is read.

To become fluent readers, students need to develop word recognition skills. Word recognition skills are referred to as *decoding*. Decoding has several aspects:

1. Phonics: Sound-letter correspondence is one of several decoding skills used by fluent readers to unlock meaning.

2. Sight Words: Fluent readers develop a sight word vocabulary. Sight words are those words which students can recognize instantly in printed form. If a reader hesitates or sounds out a word, then it is not a sight word.

3. Structural Analysis: Fluent readers use structural analysis to determine meaning and pronunciation of unknown words. Structural analysis is the study of meaningful word parts such as prefixes, suffixes, contractions, and root words. The use of structural analysis helps students move away from a letter-by-letter sounding out of unknown words. Structural analysis also helps students develop spelling skills.

4. Context Cues: It is important to teach decoding skills within a *meaningful context* not in isolation. Numerous studies have shown that accuracy in word recognition is more than doubled when words are presented within a meaningful context rather than in isolated word lists.

Studies also show that efficient readers depend more upon context cues for decoding than they do upon phonics. Context cues help readers determine the pronunciation and meaning of unknown words by using cues that occur within the natural flow of language. The use of context cues in determining pronunciation can be seen in such statements as:

I *read* the book last week.

He will *read* the book.

Pronunciation of the word *read* in these sentences depends upon context cues and the reader's knowledge of language structure.

## THE LANGUAGE EXPERIENCE APPROACH

The Language Experience Approach (LEA) to teaching reading focuses on reading as meaning making. This approach helps nonliterate adults learn to read and helps poor readers improve their reading and writing skills. LEA draws upon students' prior knowledge and life experiences as a basis for reading instruction.

LEA was developed for use in one-on-one (teacher--student) instructional settings, but it has also been used effectively in a classroom setting. Students should write about common experiences, such as buying a car or moving to a new residence.

The following is one of the many ways instructors can use LEA in a classroom setting.

### How to use LEA:

1. Have students brainstorm and generate ideas on a common experience or topic of interest.
2. Have students dictate a *story* in round-robin fashion about the experience. (*Story* refers to any dictated account, not necessarily a fictional narrative.)
3. Write the story word-for-word on the board or overhead projector exactly as the students dictate it to you.
4. Read the story to the class, pointing to words as you read.
5. Check to see if students wish to make any changes.
6. Read the story in chorus with the students.
7. When students feel comfortable with the story, have them read it to themselves.
8. Make a file of any words students wish to study (see Word Banks, page 29).
9. Make a cloze passage from the students' LEA story (see Cloze, page 28).

## WORD BANKS

A word bank is a collection of words that students and their instructor consider important enough to be in sight vocabulary and/or spelling mastery. Words may come from a variety of sources such as LEA stories or Environmental Print. (See page 25.) Students develop word identification and vocabulary skills through keeping word banks.

**How to use word banks:**

1. Limit new words to five or fewer per lesson.
2. Write (or have students write) each new word on a 3 x 5 card.
3. On the back of each card, write a definition (or place a picture) of the word.
4. File the cards in a recipe box or small accordion folder. (Students should have individual boxes or folders.)
5. Review some or all of the words at each lesson.

Word banks may be used in a variety of ways to build a wide range of skills. For example, students can sort their words according to various parameters (e.g., alphabetically, nouns or verbs, similar or different meanings). In addition, students can use their cards for sentence completion or sentence construction activities.

## DUET READING

This method works well with students who have some reading ability but tend to read word-for-word with little or no expression. Students who read word-for-word often have trouble getting meaning from written material. Duet reading is designed to increase reading fluency and sight vocabulary.

Duet reading is most beneficial if done occasionally and for short periods of time. Spend no more than ten minutes at a time in duet reading.

**How to use duet reading:**

1. Select material about 100-150 words long. Choose material at or slightly above the students' reading level. (Material may come from a variety of sources such as books, magazines, newspapers, etc.)
2. Make an overhead transparency of the material.

3. Read the material in unison with students, pointing to words on the transparency as you read. (Pointing to words allows students to find their place when they fall behind.)

4. Read with expression and at a rate appropriate for the material.

5. Continue reading at a normal speed even if students hesitate or fall behind.

6. Encourage students to look ahead and anticipate what is coming.

7. If students become frustrated, fall too far behind, or stop reading, pause briefly. Offer encouragement and then begin duet reading again. (The same passage can be read several times; however, spend no more than ten minutes in duet reading.)

8. Do not ask students to read aloud by themselves.

## ENVIRONMENTAL PRINT

Environmental print focuses on words in their natural setting. It includes signs, notices, posters, and ads that surround us each day. Even non-readers are able to recognize a large number of words from their environment. Environmental print allows beginning readers to develop a sense of being a reader.

Environmental print may come from any printed material found at home, at work, or in the community. Here is one way to use environmental print with advertisements.

### How to use environmental print:

1. Collect a variety of advertisements from newspapers, magazines, etc.

2. Have students indicate ads they recognize.

3. Discuss what the ad is selling.

4. Circle key words (e.g., product name, brand name.)

5. Have students place words and ads in a notebook, or write each word on the front of an index card with the ad on the back.

6. Have students add words to their word banks.

7. Bring in samples of other types of environmental print (e.g., traffic signs, exit and entrance signs, etc.) Follow the same procedure as with ads.

8. Have students collect their own environmental print and bring it to class for discussion and/or study.

Tips for teachers of beginning readers:

- emphasize meaning rather than decoding to sound
- model the reading process by reading to students
- integrate reading, listening, and discussion in every lesson
- help students select reading materials based upon their interests and experiences
- encourage writing even if students' skills are very limited
- have students read their own writing

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# INTERMEDIATE READERS

At the intermediate level of reading instruction, students are able to read independently. They have mastered many decoding skills and generally have a large sight vocabulary. Many intermediate readers, however, still consider reading to be a passive process. They do not realize that it is their interaction with the printed page that brings meaning to a text. They tend to see their role as one of spectator rather than as active participant in the reading process.

The reader is the key factor in bringing meaning to print. The meaning readers bring to print depends upon their background knowledge and life experiences. Because no two readers have exactly the same background knowledge or life experiences, no two readers will have exactly the same understanding of a given text. All readers filter what they read through their own experiences, attitudes, and expectations. The more readers know about the subject of a passage, the easier it will be for them to create meaning from that passage.

Good readers use previous experiences to help them anticipate and predict what they will be reading. Prediction is important in the construction of meaning from print. Intermediate readers must let go of an over-dependence upon decoding skills. They must learn to make predictions based upon their own experience and upon the information in a text. Reading for meaning, then, involves a constant process of predicting, testing predictions, and altering predictions.

Good readers are good guessers and risk takers. By its nature, however, risk taking implies the possibility of making errors. Adult learners are often insecure about their reading skills and are reluctant to make errors. They need to be encouraged to take risks and learn to develop predictive skills. The instructional strategies in this section are designed to activate adult learners' background knowledge and to develop their predictive skills.

## INSTRUCTIONAL STRATEGIES FOR TEACHING INTERMEDIATE READERS

### BRAINSTORMING

Some knowledge about a topic is necessary before readers can make sense of what they are reading. The more you know about a subject, the more you get out of reading. Good readers activate their background knowledge and are constantly integrating what they read with what they know. Unsuccessful readers often begin to read without any thought as to what they already know and how the new information fits into their current knowledge base (their *schema*). Students need to be encouraged to think *before* they begin to read. Brainstorming is a strategy which activates

background knowledge and gets students thinking before they read. Brainstorming also allows instructors to pinpoint areas of misinformation and correct misconceptions.

**How to use brainstorming:**

1. Choose a reading selection about which students will have some knowledge.
2. Have students read the title and scan any pictures, graphs, or other visuals.
3. Ask students to share what they know about the topic.
4. Record the responses on the chalkboard, overhead projector, or flipchart. Ask students for clarification as necessary.
5. Help students reduce large phrases into short, key ideas.
6. Discuss the importance of keeping background information in mind while reading. Then have students read the selection silently and quickly.
7. Have students discuss any misinformation they generated in the brainstorming session and share any new information gained.
8. Discuss the content of the article with the class.

**Example of brainstorming:**

The title of an article or story and any accompanying illustrations can form an effective basis for brainstorming.

Title: Trapped Behind the Wheel: Clever Commuters Learn to Live in the Slow Lane.

| | |
|---|---|
| rush hour traffic | experiment with new ways to work |
| construction | don't drink coffee/no bathroom |
| accidents | keep something to eat in car |
| read newspaper | write bills |
| | write letters |

## CLOZE

A "Cloze" text is a short reading passage with words deleted and replaced with blanks (prepared in advance by the teacher). The cloze technique encourages students to focus both on language structure and on meaning. Through cloze, students develop an understanding of language patterns, word and concept formation, and context clues. The cloze technique helps wean students from a heavy dependance on decoding skills and helps them focus on overall meaning. Cloze is a versatile technique that can be used with all levels of readers.

### How to use cloze:

1. Begin with a short reading passage of about 100-150 words. (Longer passages can be used with more advanced students).

2. Select material with which students are familiar. (Students' own writing works well.)

3. Leave the first and last sentence intact.

4. Select every fifth or seventh word for deletion; replace deleted words with blanks of even size.

5. Have students read the passage silently, without filling in any blanks. Then have them read the passage again, working individually to fill in the blanks.

6. As a group, have students brainstorm possible choices for deleted words. (This activity can also be done in pairs.)

7. Discuss students' answers.

**Example of a cloze passage:**

> Mike and I don't have a lot of money. We have to work. We worry about our children because they are home alone in the afternoons. Our oldest daughter, Ellen, wears the house key on a chain around her neck. At 2:30 Ellen meets the other kids and they walk home from school. Their school is five blocks from our apartment.
>
> Mike and I don't have a lot of money. We have to _____. We worry about our _____because they are home _____ in the afternoons. Our daughter, Ellen, wears the _____ key on a chain around her _____. At 2:30 Ellen meets the _____ kids and they walk _____ from school. Their school is five blocks from our apartment.

*Personal Stories: A Book for Adults Who Are Beginning to Read, Book 3. Linmore Publishing, P.O. Box 1545, Palatine, IL 60078.*

**SKIP IT**

The goal of *Skip It* is to move students away from word-by-word reading and encourage them to develop fluency in reading. Poor readers often read word by word, rather than idea by idea. They tend to stop each time they encounter an unfamiliar word, perhaps to sound it out or to look it up in a dictionary. However, clarification of unknown words or concepts often occurs as students continue to read a sentence or paragraph. *Skip It* develops students' ability to clarify meaning from context.

While *Skip It* is an individual reading strategy, it can be modelled by the teacher on the overhead projector.

**How to use Skip It:**

1. Encourage students to skip unfamiliar words they encounter while reading. Have them underline these words or jot them down on a separate sheet of paper.

2. Have students continue to read, looking for clarification or context clues that indicate the meanings of unknown words.

3. When students have finished reading, have them cross out any words for which they have figured out the meaning.

4. If the meaning of a word is not clarified, have students reread the passage (or backtrack), looking for clues to meaning.

5. If students continue to have difficulty, show them again how to find context clues. (*Thinking out loud* while reading the passage projected by an overhead projector works well.)

Tips for teachers of intermediate readers:

- encourage students to think about their purpose for reading a passage
- have students predict what a passage will be about
- encourage students to skip difficult words or phrases and read on for clarification and context clues
- explain strategies that students can use to gain meaning when clarification does not occur
- encourage students to form predictions as they read (as well as before they read)
- have students site clues that support their predictions
- encourage students to share their thinking and reasoning processes
- encourage students to integrate new information with what they already know

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# CONTENT AREA READING

The content area teacher helps students learn from textbooks. The emphasis is on *reading to learn* a particular subject (such as history or science) rather than *learning to read.*

Students often experience difficulty reading content area materials. Difficulties are caused by a variety of factors:

- deficits in decoding skills
- lack of familiarity with the subject matter
- inability to use textbook structure effectively
- failure to use efficient reading strategies

## SUBJECT FAMILIARITY AND DECODING SKILLS

While limitations in decoding may hinder comprehension, they need not be insurmountable. (See page 22 for a discussion of decoding skills.) Research shows that familiarity with a particular subject area not only helps readers overcome decoding deficits, but can actually lead to improvement in decoding skills. The old adage, "Nothing improves reading skills like reading", is true.

Familiarity with subject matter can help make up for decoding deficits. Conversely, good decoding skills can aid comprehension of unfamiliar subject matter. The role of the content area instructor is to help students start with what is already familiar and expand upon this knowledge base. The instructional strategies presented later in this section help build students' knowledge base.

## TEXTBOOK SELECTION AND ORGANIZATION

The structure of the textbook itself can play an important role in aiding students' understanding. Factors to be considered when choosing a textbook include:

- the amount of new vocabulary
- the complexity of sentence structure (length, grammar, vocabulary, etc.)
- the number of new concepts presented at one time

- the amount and type of graphical aids provided (i.e., photographs, charts, tables, maps)

- the opportunity for practice and reinforcement of new material

Textbooks generally contain a wide range of contextual clues. Such features as headings, subheadings, and changes in print size and color are designed to serve as signposts for students. Graphs and charts, too, help to summarize and organize main ideas. Students must learn to read these signposts and focus on key ideas instead of trivia.

**Textbooks tend to be organized according to five major patterns:**

1. Cause/Effect: links reasons with results and outcomes with causes

2. Comparison/Contrast: demonstrates apparent likenesses and differences between two or more items or events

3. Time Order Sequence: illustrates the relationship between ideas and events over a period of time

4. Listing: simply lists a number of items or ideas

5. Problem/Solution: shows the interaction between a potential problem and possible solutions to the problem (similar to cause and effect)

**An awareness of these five organizational patterns allows students to:**

- make predictions about what they will read

- follow an author's train of thought

- see relationships among ideas and concepts

- make associations between previous knowledge and new knowledge

- analyze new information critically

## MAPPING

Concept mapping (also called *semantic mapping*) helps students recognize different types of organizational patterns typically used in content area materials. Mapping is a graphic representation of the relationships between major ideas and supporting details. This technique encourages students to use their background knowledge along with new information presented in the text to form a visual picture of how individual pieces of information fit together.

Mapping can be used as an introduction to a new topic, as a vocabulary builder, or as a note-taking and study aid.

### How to use mapping:

1. Have student preread the passage (or textbook chapter) to insure some prior knowledge of the topic.

2. Have students identify the main ideas of the passage.

3. Write the main topic in the center of the blackboard or on an overhead transparency; circle the topic.

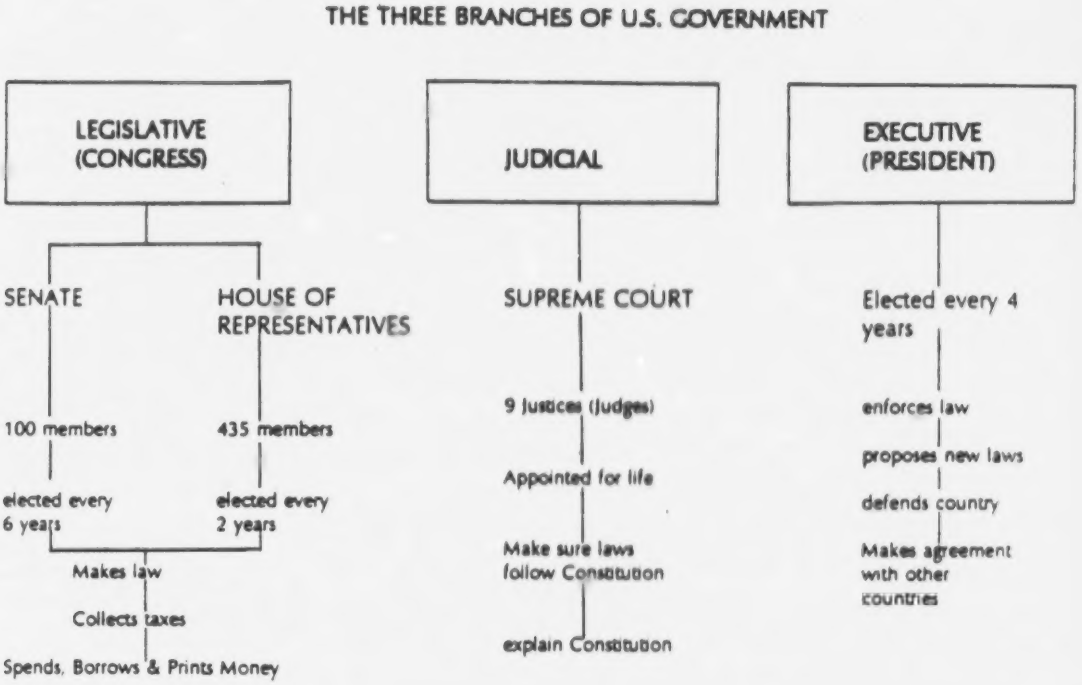
4. Have students identify supporting secondary ideas. (These may be found in subheadings within a textbook chapter.)

5. Draw lines to connect secondary ideas with the main idea.

6. Identify supporting details for each secondary idea. Then arrange supporting details under the appropriate secondary idea in a logical fashion.

Instructors need to model the process of mapping when it is first introduced to students. The instructor should demonstrate, allowing students to do as much of the process as possible. As students become more familiar with mapping, they will be able to do all the steps individually or in small groups.

**Example of a map:**




## ANTICIPATION GUIDES

Anticipation guides prepare students for reading by asking them to react to a series of statements (prepared in advance by the teacher) which are related to the material they are about to read. In reacting to these statements, students anticipate or predict what the content will be. This activity is designed to help students focus on key points, to connect what they already know to information in the text, and to integrate discussion with reading.

**How to use anticipation guides:**

1. Identify concepts that are most important for students' understanding of a passage.

2. Write three to five statements based upon each concept. (The statements should be thought provoking and reflect students' backgrounds.)

3. Have students read the statements individually, indicating whether they agree or disagree by putting a check in the correct column (see example below).

4. As a whole class or in small groups, have students discuss the statements using their knowledge of the subject matter to support their opinions.

5. Have students read the passage silently and quickly.

6. Have students discuss the statements again after reading the passage.

**Example of an anticipation guide:**

Step 1: Before you read, check those statements in column A that you think are true.

SOLAR SYSTEM

| A<br>Predict | B<br>Confirm | |
|---|---|---|
| _____ | _____ | The solar system only contains the sun and the nine planets |
| _____ | _____ | The sun is the center of the solar system |
| _____ | _____ | A planet that is farther away from the sun takes longer to orbit the sun. |
| _____ | _____ | Earth makes one full trip around the sun every 152 days. |

Step 2: After you read, put a check in column B by all the statements you can confirm to be true from your reading.

Step 3: Rewrite each statement which is not correct. (Questions can be used for pre and post reading discussion)

## K-W-L

K-W-L is a study strategy in which students think about what they already know about a topic and predict information they expect to learn. K-W-L helps students focus on important facts and details related to content topics. K-W-L can be used by instructors to gauge how much prior knowledge students have of a topic. If student knowledge is limited, instructors may want to bring in additional material and experiences to build the students' knowledge base before introducing new textbook material.

### How to use K-W-L:

To use K-W-L, each student has a sheet of paper with three columns. The first is labeled K ("What I Already Know"), the second, W ("What I Want/Need to Know"), and the third, L ("What I Have Learned"). (See example below.)

1. Begin with the K column. Have students brainstorm everything they know about the topic.

2. Write the responses on the chalkboard or on an overhead transparency. Discuss each response as it is entered.

3. Have students decide whether or not any of the responses fall into categories.

4. Have students group the responses on their sheet (under the K column) into major topics and supporting details.

5. Proceed to the W column. Have students formulate hypotheses of what they think the reading passage will be about. Have them formulate questions as to what they want to know. Have students write these under the W column.

6. Have students read the passage silently and quickly.

7. Have students reread the passage, filling in the L column with new information learned and correcting any misconceptions.

8. As a whole class, discuss what students have put under the L column.

**Example of a K-W-L:**

| K | W | L |
|---|---|---|
| Snakes are cold.<br>Snakes are scary.<br><br>Snakes eat mice.<br>Snakes represent evil. | Are snakes slimy?<br>How did snakes get such a bad reputation?<br>What do snakes eat?<br><br>Are snakes useful?<br>What are their living habits? | Snakes are cold-blooded reptiles, but not slimy. Snakes eat mice, rats, and farm pets.<br><br>Farmers find snakes useful around the farm. Snakes live around barns and have live babies. |

Tips for content area teachers:

- select textbooks that are well structured and present ideas clearly
- when necessary, help students build background knowledge needed to understand content materials
- discuss and model how to read textbooks effectively
- help students focus attention so that major content--not trivia--comes into focus

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# STUDY SKILLS

Study skills are learning strategies that help students become more effective and efficient learners. Study skills focus on both how to learn and how to use what has been learned.

Many ABE/GED students rely on rote memory for learning. Rote learning involves memorizing information in the form in which it is first encountered. Rote learning is the least effective way to learn new information. It does not require students to understand the material being learned and is ineffective when large amounts of information have to be learned. Students who learn through rote memorization often have difficulty generalizing and applying information to new learning situations.

Instructors need to teach study skills that help students *reorganize* information--not simply recall it verbatim. If students can organize information themselves, they will be better able to understand and apply what they learn. Classifying, labeling, and summarizing are a few of the skills that require students to reorganize information.

## INSTRUCTIONAL STRATEGIES FOR DEVELOPING STUDY SKILLS

Effective and efficient learning strategies require students to organize concepts and details so that relationships between ideas are clearly and readily understood. Students need to be constantly encouraged to organize and reduce information. Students also need to be encouraged to state concepts in their own words as an aid to understanding.

Here are two learning strategies that teach students to summarize, organize, classify, and reduce information--leading to better storage and retrieval of information.

### LOOK BACK AND SUMMARIZE

Students often experience difficulty identifying the main ideas of a passage. The ability to summarize plays a key role in recall of important information. *Look Back and Summarize* is a study skill which teaches students to identify main ideas without being distracted by minor details.

Instructors should guide the class step-by-step through the process described below for each paragraph of a passage until students are able *Look Back and Summarize* a passage on their own.

**How to use Look Back and Summarize:**

1. Have students read a passage silently. Working paragraph by paragraph, have students identify the main idea(s) of each paragraph. (This can be done as a group until students are comfortable doing it on their own.)

2. Have students write the main ideas of each paragraph in their own words.

3. Have students review their summaries. Have them delete redundant information, replace lists of items with general categories, and reorganize information as necessary.

## CORNELL NOTES

Cornell Notes is a note-taking system. This learning strategy is especially useful when dealing with factual information. Through the Cornell note-taking system, students summarize information on one page using a two-column, question-answer format. The right hand column is used to record notes while the left hand column is used for monitoring understanding and recall of information (see example below).

**How to use Cornell Notes:**

1. Each student should use one side of a piece of notebook paper. Have students draw a vertical line approximately 3 inches from the left edge of the paper.

2. Have students take notes on a reading passage or a textbook chapter, recording their notes in the right-hand column. (Model the note-taking process as necessary, helping students focus on important facts and ideas.)

3. Have students reduce their notes to cue words and questions, assisting as necessary. Have them record these cues and questions in the left-hand column.

4. Have students fold the right-hand column under so that only the cue words and questions from the left column show. Have students work in pairs to summarize the key information orally, using the cue words and questions from the left column to aid recall.

5. Have students unfold the right-hand column to check the accuracy of their recall.

*Note: Steps #4 and #5 can also be done individually, in or out of class.*

**Example of Cornell Notes:**

| Clue Words & Questions | Notes |
|---|---|
| Definition of Constitution | Constitution - The U.S. Plan and Government |
| First U.S. Plan for Government | Articles of Confederation - First Plan for U.S. Government. |
| Problems with Article of Confederation | Problems with Articles of Confederation<br>- each state was independent<br>- own money<br>- own army<br>- central government weak<br>- it did not work |
| 1787 | Constitutional Convention 1787 Philadelphia - Wrote a New Plan for Government which 15 still use today |

Tips for teachers of study skills:

- help students arrange facts and ideas according to main ideas and supporting details
- help students group facts and ideas according to similarities and differences (e.g., according to categories)
- encourage students to create outlines, diagrams, charts, and semantic maps to illustrate relationships between ideas (see page 35 for a discussion of mapping).
- encourage discussion to clarify understanding of relationships and to explore implications and applications of information
- focus on one concept or skill at a time so as not to overload memory
- help students to review and summarize each lesson at the end of the class period
- provide short, periodic reviews of important information from previous classes
- provide ample time for practice of study skills

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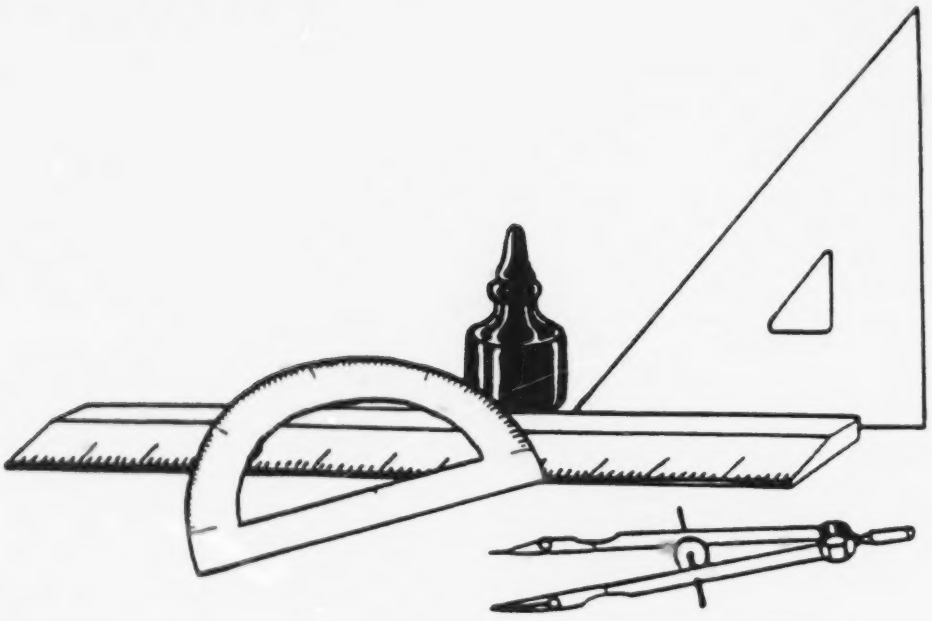
# MATHEMATICS



# STANDARDS FOR ABE/GED INSTRUCTION*

* *Adapted from: Curriculum and Evaluation STANDARDS for School Mathematics, National Council of Teachers of Mathematics, 1989.*

The National Council of Teachers of Mathematics (NCTM) has published a document, entitled Standards (1989), outlining a curriculum guide for elementary and secondary mathematics instruction. Many mathematics experts view standards as the criteria for excellence in mathematics. It is recommended that the following goals, as explained in this guide, be at the heart of an ABE/GED mathematics program:

- students learn to value mathematics
- students become confident in their ability to do mathematics
- students become math problem solvers
- students learn to communicate mathematically
- students learn to reason mathematically

These goals help students become mathematically literate. To become math literate, the student must learn by doing. Learning should be active, not a passive memorization of concepts and procedures. To be valuable, knowledge must serve a purpose. Therefore, instruction should constantly stress active learning.

## FOUNDATIONS FOR ABE/GED MATHEMATICS

Today basic skills in mathematics mean more than computational proficiency. Traditional paper-and-pencil calculations can be done on a calculator, therefore, instruction aimed solely at mastering basic computational skills needs to be questioned and reevaluated. Students who have been unsuccessful in mathematics will not become experts if they are reexposed to the same methods of instruction. Instead, the NCTM suggests that Standards be used as the framework for ABE/GED mathematics instruction.

## STANDARD 1: MATHEMATICS AS PROBLEM-SOLVING

ABE/GED mathematics instruction should strengthen and expand the critical thinking skills students need to:

- investigate and understand mathematical content
- formulate, develop, and solve a wide variety of problems from everyday situations
- verify and interpret results with respect to the original problem

**How to teach problem-solving:**

1. Model a variety of problem-solving strategies:

   a. Provide students with manipulative materials (e.g., household and/or classroom objects that can be counted, grouped, measured).

   b. Encourage them to use the trial-and-error method.

   c. Have students make an organized list or table, and show them how to use that tool to look for relationships or patterns.

   d. Demonstrate how a diagram can help them solve a problem.

2. Have students solve non-routine problems, problems that have more than one correct solution. For example, "I have six coins worth 42 cents; what coins do you think I have? Is there more than one answer?"

3. Devise real-world problems that mirror situations students are likely to encounter in their daily lives.

4. Have students formulate their own problems.

5. Insist that students verify results, interpret solutions, and question whether a solution makes sense.

6. Conduct whole-class discussions where students share their approaches. In this way, students can enrich and expand their repertoire of strategies for solving problems.

## STANDARD 2: MATHEMATICS AS COMMUNICATION

The ABE/GED mathematics class should include numerous opportunities for communication so that students can:

- relate physical materials, pictures, and diagrams to mathematical ideas
- reflect on and clarify their thinking about mathematical ideas and situations
- relate their everyday language to mathematical language and symbols
- realize that representing, discussing, reading, writing, and listening to mathematics are a vital part of learning and using mathematics

**How to teach communication:**

1. Have students represent one problem in a variety of ways. For example, have them translate a diagram or physical model into symbols or words.

2. Encourage students to explain their solution procedures both verbally and in written form.

3. Devise questioning techniques that help students make connections among concepts, procedures, and approaches. For example, provide students with open-ended problems: "Give examples of numbers between 1/2 and 1/3; give a number with a repeating decimal representation; name a rectangle with four congruent sides."

4. Clarify the differences and similarities between common and mathematical language. For example, *improper fraction* and *right angle* may mislead students who rely on the common meanings of *improper* and *right.*

## STANDARD 3: MATHEMATICS AS REASONING

The study of mathematics should emphasize reasoning so that students can:

- use models, known facts, properties, and relationships to explain their thinking
- justify their answers and solution processes
- use patterns and relationships to analyze mathematical situations
- believe that mathematics makes sense

**How to teach reasoning:**

1. Present problems that require students to identify valid and invalid arguments. For example, when attempting to solve 35 - 19 = [ ], would it help to know that 35 -20 = 15, or to think of 19 as 15 + 4, or to count backward from 19?

2. When appropriate, have students use the process of elimination: "Who am I? I am an even number. I am more than 20 and less than 30. I am not 25. The sum of my digits is 8."

3. Promote inductive reasoning with problems that require students to identify number patterns.

4. Provide students with many opportunities to develop proportional reasoning: "Cookies sell for $1 each, or 10 for $9. If you want to buy 40 cookies, how much should you pay?"

5. Help students discover the power of graphs in problem-solving situations.

## STANDARD 4: MATHEMATICAL CONNECTIONS

Mathematics instruction should include opportunities to make connections so that students can:

- link conceptual and procedural knowledge
- recognize relationships among different topics in math
- use math in other curriculum areas and in their daily lives

**How to teach mathematical connections:**

1. Connect mathematical ideas to everyday experiences. For example, have students compare the price of two different brands of the same product, such as canned fruit.

2. Demonstrate how to represent a problem in more than one way. For example: "John and Mary need to drive 723 miles in three days. How many miles should they plan to drive each day? Represent the problem as 723/3 = [ ] and as 3 x [ ] = 723."

3. Connect mathematics to other subject areas, e.g., social studies and language: "What is the tallest building in Japan? How tall is it? Write a sentence comparing its height to the height of the Sears Tower in Chicago."

**Standards 1 - 4** are integral parts of the remaining Standards. They are the vehicles that convey the mathematical content. To teach any mathematical concept, you need to use problem-solving, communication, reasoning, and connections.

## STANDARD 5: ESTIMATION

Estimation needs to be included routinely in mathematics instruction so that students can:

- recognize when an estimate is appropriate
- determine if results are reasonable
- apply estimation in working with quantities, measurement, computation, and problem-solving

**How to teach estimation:**

1. Teach specific strategies to aid students in computational estimation. For example, to evaluate 243 + 479 = [ ], the student might estimate by thinking 200 + 400 is 600, 43 + 79 is over 100, so the sum is a little more than 700; or 243 is just under 250, 479 is just under 500, so the sum is less than 750.

2. Illustrate the process of chunking by having students estimate the number of boxes necessary to fill the classroom. The student needs to mentally line up the number of boxes that will fit along one wall and use them as a *chunk* or unit to estimate how many units are needed to cover the floor.

3. Always have students check their initial estimates to see if they are reasonable, and then have them make additional estimates so that they can use the feedback to refine their estimating skills.

## STANDARD 6: NUMBER SENSE AND NUMERATION

The ABE/GED mathematics curriculum should include whole number concepts and skills so that students can:

- develop number meanings through real-world experiences and the use of physical materials
- understand our numeration system by relating counting, grouping, and place value concepts

**How to teach number sense and numeration:**

1. Use money and its natural grouping into base 10 for examination of place value and to link number symbols to real materials.

2. Explore number relationships with manipulatives; e.g., "Here are 256 beans. How many piles of 10 beans could you make?"

3. Understand the relative magnitudes of numbers; e.g., 31 is larger than 4, about the same size as 27, about half as big as 60, and small compared to 92.

## STANDARD 7: CONCEPTS OF WHOLE NUMBER OPERATIONS

The ABE/GED mathematics curriculum should include concepts of addition, subtraction, multiplication, and division of whole numbers so that students can:

- develop meaning for the operations by modeling and discussing a rich variety of problem situations
- relate the mathematical language and symbolism of operations to problem situations and informal language
- recognize that a wide variety of problem structures can be represented by a single operation
- develop operation sense

**How to teach concepts of whole number operations:**

1. Use models and objects to discuss how to solve many different kinds of problems in order to understand the properties of the four basic operations; for example, teachers should demonstrate problems that involve joining and separating, or equalizing and comparing.

2. Provide a wide variety of problem structures to demonstrate the language and symbols of the four operations, e.g., addition is the inverse of subtraction; multiplication is the inverse of division; adding 5 to 25 produces a much smaller answer than 5 x 25.

## STANDARD 8: WHOLE NUMBER COMPUTATION

The ABE/GED mathematics curriculum should develop whole number computation so that students can:

- model, explain, and develop reasonable proficiency with basic facts and algorithms
- use a variety of mental computation and estimation techniques
- select and use computation techniques appropriate to specific problems and determine whether the results are reasonable

**How to teach whole number computation:**

1. Use models to link manipulatives to the procedures without focusing solely on paper-and-pencil exercises.

2. Develop thinking strategies using conceptual approaches to computation instruction. This enables students to think mathematically and understand relationships. For example, 7 + 8 = [ ], think 7 + 7 = 14 and one more is 15; 6 x 6 = [ ], think 5 x 6 = 30, and 6 more makes 36.

3. Emphasize and integrate both mental computation and estimation throughout all computational work. For example, three ABE classes decided to have a picnic together. Mr. Clark, one of the instructors, spent $26.94 for refreshments. Since the three teachers wanted to share the cost equally, Mr. Clark used his calculator to determine that each teacher should pay him $13.47. Is his answer reasonable? Explain. After estimating, the students concluded that Mr. Clark was wrong. 27 divided by 3 is 9; therefore, each teacher should pay him about $9.00, not $13.47.

## STANDARD 9: GEOMETRY AND SPATIAL SENSE

The ABE/GED mathematics curriculum should include two- and three-dimensional geometry so that students can:

- describe, model, draw, and classify shapes
- investigate and predict the results of combining, subdividing, and changing shapes
- relate geometric ideas to number and measurement ideas

**How to teach geometry and spatial sense:**

1. Allow students to explore patterns and relationships with models, physical materials, and graph paper. They will learn about the properties of shapes and sharpen their intuitions and awareness of spatial objects.

2. Have students draw a picture or diagram (a geometric representation of the problem) to develop their skills and concepts of problem-solving and spatial sense. For example, tell them, "Draw a dog that is tied to a 5-meter rope at the middle of the side of a garage. The side of the garage is 10 meters long. Make a sketch and use centimeter grid paper to estimate the area and shape of the ground on which the dog can walk."

## STANDARD 10: MEASUREMENT

The ABE/GED mathematics curriculum should include measurement so that students can:

- understand the characteristics of length, capacity, weight, mass, area, volume, time, temperature, and angle
- develop the process of measuring and concepts related to units of measurement
- make and use estimates of measurement

**How to teach measurement:**

1. Focus classroom experiences on measuring objects, making objects of given sizes, and estimating measurements.

2. Have students measure the same object with different standard units such as inches, feet, yards, pints, gallons, etc. to provide the background for learning the basic relationships between units and conversions. For example, the table is about six straws long or about eight pens long. It takes fewer straws than pens because the straws are longer.

3. Outline the process of measuring and emphasize that it is identical for any characteristic, choose a unit (inch, meter, etc.), compare that unit to the object, and report the number of units.

## STANDARD 11: STATISTICS AND PROBABILITY

The ABE/GED mathematics curriculum should include experiences with data analysis and probability so that students can:

- collect, organize, and describe data
- construct, read, and interpret displays of data
- formulate and solve problems that involve collecting and analyzing data

**How to teach statistics and probability:**

1. Base instruction on investigation and exploration to provide students the opportunity to discover what information is appropriate and how to collect the data. Then have students analyze and evaluate the information in order for them to draw their own conclusions.

2. Allow students the opportunity to construct and discuss pictorial and symbolic graphs. For example, tell them to compare the temperature of their city with the temperatures of two other cities. Students can obtain pertinent data from such sources as newspapers or television. They can participate in a discussion and make decisions about what questions to ask, what data to collect, and how to collect, organize, and display that data for others to see and interpret.

3. Incorporate information from other content areas, especially science and social studies, to reinforce the importance of these skills in the real world.

## STANDARD 12: FRACTIONS AND DECIMALS

The ABE/GED mathematics curriculum should include fractions and decimals so that students can:

- develop concepts of fractions, mixed numbers, and decimals
- use models to relate fractions to decimals and to find equivalent fractions
- use models to explore operations on fractions and decimals

**How to teach fractions and decimals:**

1. Begin instruction by clarifying the necessary vocabulary for dealing with fractions and decimals such as one-third, two-fifths, tenths, and hundredths.

2. Have students construct a whole when only given a part; in small groups or as a class have students compare solutions.

3. Explore equivalent fractions and compare fractions using physical materials such as folded paper strips or food items; do this for decimals as well.

4. Relate fractions to decimals so that students begin to establish connections between the two systems. For example, if students recognize that 1/2 is the same amount as 0.5, they can use this relationship to determine that 0.4 and 0.45 are a little less than 1/2 and that 0.6 and 0.57 are a little more than 1/2.

These twelve Standards established by the National Council of Teachers of Mathematics form a solid foundation for ABE/GED mathematics instruction. The groundwork is laid for students to become confident, successful problem solvers. As students develop logical thinking patterns and deductive reasoning abilities, they will begin to think mathematically and relate mathematics to their everyday lives.

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# WRITING

# THREE STAGES OF THE WRITING PROCESS

Many ABE/GED students find writing to be a difficult chore. They feel that writing is an inborn talent that they simply do not have. Many adult learners, therefore, avoid writing whenever possible. This presents a particular challenge to adult educators faced with the task of teaching their students to write well. The fact is that writing is hard work, even for professionals. It is, however, a skill that can and should be taught.

Writing is a logical extension of thinking. It freezes thought so that it can be shared across time and space (i.e., letters, family histories, stories). It allows writers to analyze and clarify their own thoughts and the thoughts of others. Writing can be used to learn new information and gain new insights, as well as for expression of creativity and for personal enjoyment.

The process of writing encompasses a variety of elements: the gathering of thoughts, the formulation of ideas, the selection of words, and the development of mechanics (i.e., handwriting, grammatical structure, spelling, and punctuation). While all these elements are important, recent research points out that *writers are unable to concentrate on ALL aspects of writing at the same time.* That is, too much focus on one area will adversely affect other areas. If writers focus on spelling and grammar, for example, then the formulation of ideas may suffer. When writers focus on ideas and getting them down in words, then spelling and grammatical structure may suffer. Since it is difficult to focus on all aspects of writing at the same time, instructors should focus each writing lesson on one specific aspect of writing.

The process of writing can be separated into three stages; 1) prewriting, 2) drafting, and 3) revising/editing. This section will detail instructional strategies for each stage of the writing process.

## STAGE ONE: PREWRITING

The prewriting stage focuses on gathering ideas and thoughts. Once ideas have been gathered, writers can begin to think about the relationships between ideas and how they can be organized in a logical fashion.

### INSTRUCTIONAL STRATEGIES FOR PREWRITING

#### FREEWRITING

The first task of the writing teacher is to take the discomfort and anxiety out of writing. One way to reduce writing anxiety is to give students uncorrected writing practice called freewriting.

**How to use freewriting:**

1. Initial freewriting should be kept short (no more than 10 minutes). Students can write about anything they wish or a topic can be assigned.

2. If a topic is assigned, have students write about familiar objects and ideas. For example, students might make a list of things they have to do today, of foods they like or hate, or of places they would like to visit. Teachers might also have students write descriptions of such things as the week's changing weather, what's happening outside the classroom window, or of another person in class.

3. Have students write without stopping for 5 or 10 minutes. If they can't think of what to write, have them write, "I can't think of what to write" over and over. Students will soon think of something to write about. The goal of freewriting is to reduce the fear of putting words on paper.

4. Freewriting may then be shared with the instructor, with a partner, in small groups, or with the entire class. It is important to focus only on the *content* of the writing and not on the *mechanics* of the writing.

## BRAINSTORMING

A common complaint of writers is, "I don't know what to say." Through brainstorming, writers can generate ideas without the pressure of producing a finished piece of writing. The ideas generated through brainstorming can then be organized into a piece of writing.

**How to use brainstorming:**

Using brainstorming as a pre*writing* activity is similar to using brainstorming as a pre*reading* activity. See page 27 for ideas on how to use brainstorming. Brainstorming is a group activity that generates a number of ideas in a short amount of time. It can be used with a wide range of ability levels and subject matter. In brainstorming:

1. Accept everything. Do not criticize or evaluate ideas.

2. Welcome the outlandish. New ideas are born when there is freedom to explore.

3. Allow sufficient time for students to generate a number of ideas. The more ideas, the greater the chance of developing good writing.

Brainstorming can be done individually, in small groups, or with the whole class.

## CLUSTERING

Clustering is similar to the prereading activity of mapping (see page 35). Like mapping, clustering adds a visual dimension to the process of organizing ideas. Clustering helps students to separate their ideas into categories and improves organization in their writing.

It is a good practice to do clustering one class session and writing the next. This gives students time to mull ideas over before they begin to write. Clustering should be done as a whole-class activity before students are asked to do it in small groups or individually.

### How to use clustering:

1. Write topic in the middle of a sheet of paper or on the chalkboard (i.e., *Spring*).

2. Draw a circle around the topic.

3. Draw lines or spokes out from the circle. At the end of one line, write the first key idea that students suggest. For example, if *Spring* brings to mind gardening, write *gardening* at the end of one line.

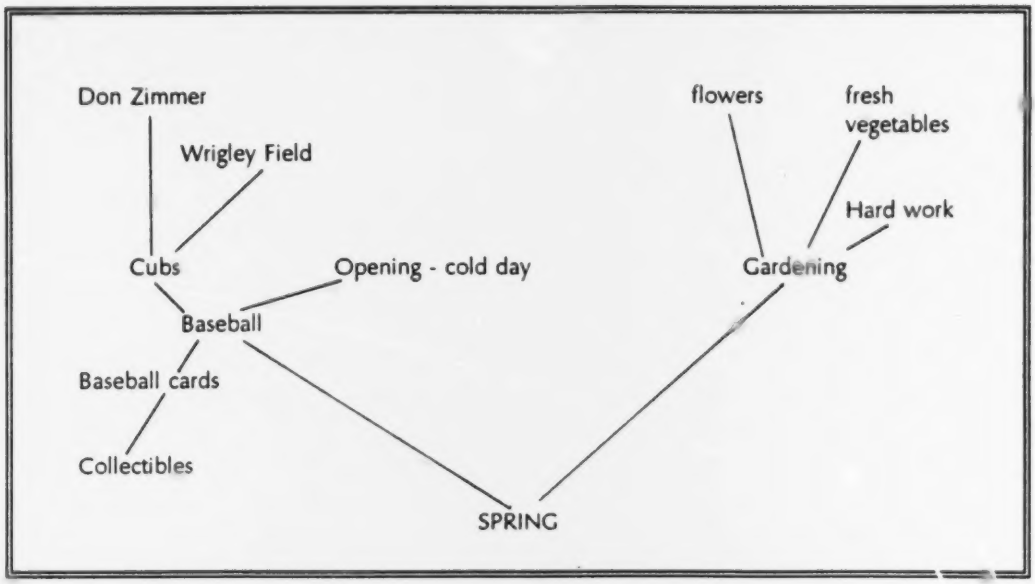
4. Write any words that the key word *gardening* brings to mind in a cluster around the key word. Have the class brainstorm ideas. For example, gardening might bring to mind flowers, hard work, fresh vegetables, or the smell of earth (see the example below).

5. When students think of a new key word or topic, draw a new line from the center circle and write the new key word at the end of the line. For example, spring might also bring to mind *baseball*, which would lead to a whole cluster of words and ideas.

6. Continue this process of free association for 5-10 minutes.

7. At the end of this time (or at the next class), have students evaluate the ideas and decide which one they would like to write about.

**Example of clustering:**




## STAGE TWO: DRAFTING

With the security of knowing what they want to say and in general how they want to say it, students are ready to write. Using the ideas generated by the prewriting activities, students should be encouraged to write freely. Concern for correction of grammar and spelling should be left for the rewriting stage. The goal of the writing stage is not a perfect product but the production of a *draft*. The strain of making a piece of writing mechanically correct on the first writing interferes with expression of ideas and coherence.

When students finish their first drafts, they should reread their work to check for clarity of ideas and correctness of grammar. Having students read their papers aloud can help them to find grammatical and organizational problems. Students can also read their papers into a tape recorder and then listen to themselves on the tape.

## STAGE THREE: EDITING/REVISING

The second writing (the *rewriting*) of the paper should be the final one. Too much rewriting removes the spontaneity from the writing and any enjoyment from the effort.

Writing is a developmental process, with each paper only a step in the process. However, to give meaning and validity to the assignment, papers shouldn't simply be returned without comment. Instructors should take time to make comments on the papers and have students rewrite as necessary.

Instructors need to be careful not to over-correct. Red marks covering a page of writing is very discouraging. Corrections should focus on a few specific problems. Some problems, such as spelling or punctuation, can be easily corrected with a simple rewrite. Complex problems of organization and structure, however, should be discussed individually with the student before having the student rewrite the paper.

## INSTRUCTIONAL STRATEGIES FOR REVISING/EDITING

### SENTENCE COMBINING

Sentence combining is a useful technique to help students build longer, more complex, and more interesting sentences. Students are asked to make one combined sentence using as many words as they can from two or three sentences and adding connectives as required. In the process students naturally begin to question whether the connective *but* is more useful than *and* or why a semicolon might work rather than a period on sentence combining:

1. Give students a list of connectives, definitions, and examples for their use.

2. Choose two or three lines from a popular rock, folk, or rap song and have students combine sentences using connectives. This should be done as a whole group first, then in small groups before asking students to combine sentences individually.

3. Select choppy sentences from students' own writing and have them practice combining sentences.

4. Have students combine two or three sentences using as many words from each sentence as they can.

**Example of sentence combining:**

Sentence 1: Returning to school was hard.

Sentence 2: I remember being embarrassed in school.

Sentence 3: I am afraid of being embarrassed again.

Combined Sentences:

Returning to school was hard. I remember being embarrassed in school and I am afraid of being embarrassed again.

## SPELLING

Grammar and spelling errors often inhibit students' writing. Misspellings are seen as reflecting unfavorably upon writers and, as a result, students' self-images often suffer. In an attempt to avoid spelling errors, students often substitute less effective words they *can* spell for more precise words they *cannot* spell. This may result in a distortion of meaning. Instructors need to keep in mind that grammar and spelling are tools of effective writing but are not in and of themselves the key to effective writing.

Tips for helping students improve their spelling:

- focus on words with highest frequency of use
- do not spend unnecessary time on the meaning of words, as the meaning of many spelling words are already known
- encourage students to use computer spell-checks if possible
- provide instruction in dictionary use and include:
  - looking up words in dictionary
  - marking words which have been looked up
  - making a note about why the word was looked up (i.e., word spelled with *k* instead of *c*)
  - putting a date beside each new word looked up
  - encouraging students to look at pronunciation of words since mispronunciation sometimes leads to misspellings
  - encouraging students to look up synonyms for words they cannot find in the dictionary (they will probably find the word they want used in the definition)

## SHARED EDITING

Most students are relieved to finish a written assignment and are reluctant to rewrite. Yet drafts are generally inexact in choice of words and details. They may also ramble and lack clear organization. In shared editing, students read each others' papers and comment on the clarity of ideas. Shared editing can help students understand the need to rewrite. In addition, shared editing helps students focus on the clarity of their written communication. With shared editing, students serve as both readers and writers.

**How to use shared editing:**

1. Have students read their writing to each other or to the class. Students who feel uncomfortable reading may tell about what they wrote. This should be done until students feel comfortable with sharing their writing.

2. Have student writers share with the group one positive aspect of their own writing.

3. Have a partner or a group member share one positive aspect of writing with the writer.

4. Have students select one or two questions they would like answered about their writing. The instructor may need to provide students with a list of questions to choose from. This list might include:

   - What did you like about the paper?
   - What questions do you have about the paper?
   - Were there any places that were hard to follow?
   - Was there a point you didn't understand?
   - Were there places that needed more detail?
   - Were there places where there was too much detail?
   - What would make my paper clearer?

5. Have students rewrite papers.

## ADDITIONAL INSTRUCTIONAL STRATEGIES FOR TEACHING WRITING

### PICTURE, PICTURE

Pictures can help students generate ideas to write about. This technique uses pictures to help students move from stilted writing to writing that is expressive and flowing.

**How to use Picture, Picture:**

1. Select a picture from a newspaper or magazine. (Life, Look and National Geographic are excellent sources of pictures).

2. Attach a piece of paper to the bottom of the picture.

3. Pass the picture around a small group (3-5 students) and have each student write a comment or an adjective that describes the picture.

4. Have students work together to write either sentences, a paragraph, or a story about the picture according to their ability level.

5. For very weak writers, provide unfinished sentences or guiding questions to help them get started. For example, you could attach the following sentences to a picture of an old woman:

   The old woman is _____
   She feels _____
   She would like to be _____

Finished products often sound like poems and help students begin to think about sentence expansion and how words can be used to paint a picture.

## JOURNAL WRITING

A journal is a record of the students' thoughts and experiences. Through use of a journal, students and teachers can communicate with each other regularly in a written conversation. Students write as much as they choose on any given topic. Teachers may also assign topics. The teacher then writes comments, reactions, or questions for each entry. Teachers' responses should contain no revisions or evaluations.

Journal Writing:

- provides individualized contact with each student
- develops students' confidence in their writing ability
- focuses on writing as communication
- results in student writing that becomes more fluent, interesting, and correct over time

**How to use journal writing:**

1. Have students obtain a spiral notebook that will only be used for journal writing.

2. Keep the initial writing in journals brief (10-15 minutes.)

3. Journal writing may be done during class or at home.

4. Assure students that the journals are private conversations between the instructor and the student.

5. Students who find journal writing difficult might:
   - select a picture they want to write about
   - ask questions about something they would like to know or find interesting
   - write their opinion about a current social event
   - list 6-7 non-personal questions and have students interview each other (i.e., If you could have lunch with anyone in the world, who would it be?)
   - record thoughts about their day or their progress in the classroom

## READING AND WRITING

Students can learn a great deal about writing by reading. Other authors' writing can serve as models for instruction. Material can come from students' writing, newspaper columns, advertisements, letters, magazine article, poems, etc. Reading not only provides students with information and ideas to write about, but also provides students with examples and insights into the structure of written language. Through analysis of what they read, students begin to recognize effective and ineffective uses of written language. They can examine a writer's choice of words, sentence structure, and organization of ideas. Students can also work from written texts by summarizing, changing words, or reacting to what has been written.

**How to integrate reading and writing:**

1. Select a short piece of writing to serve as a model for instruction.

2. Read a piece aloud to students.

3. Discuss the effectiveness of the passage with the students. Some questions to guide discussion might be:

   - Is the piece interesting? Why or Why not?
   - Are the ideas clear and easy to understand?
   - Is there any place that is hard to understand?
   - Is there a beginning, middle, and end?
   - How are the paragraphs organized and connected?
   - Are the sentences arranged in a logical, interesting way?
   - Are there places that needed more detail or less detail?
   - How does the author's choice of words affect the meaning of the piece?

4. After discussing the piece students could be asked to:

   - rewrite unclear passages
   - reduce the passage to a few sentences using their own words
   - write their own version of the passage
   - change wording to see effect on meaning (This is especially effective when emotion- charged words are used.)

Tips for writing teachers:

- before asking students to write, try out the assignment yourself (You'll be much more effective in recognizing pitfalls.)
- encourage students to take risks
- use writing for every subject taught
- help students verbally express their thoughts before, during, and after writing

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# CLASSROOM MANAGEMENT

# MULTILEVEL CLASSES

A multilevel class is one in which students have a wide range of ability levels. Every ABE/GED class is to some extent a multilevel class. Even the most carefully assessed and assigned classes become multilevel over time as students make progress according to their individual abilities and aptitudes. There are also a number of other reasons for multilevel classes.

**Placement testing**: Testing for student placement frequently targets only one skill area. For example, a reading test may be given to place students into Basic Skills, Pre-GED, or GED classes--classes which include both reading and math instruction. Since proficiency in reading and math are not necessarily correlated, the students in these classes will tend to have a wide range of math skills.

It is also important to realize that many tests used for placement purposes are imperfect indicators of students' actual abilities.

**Limited program resources**: Funding considerations often determine the number and size of adult education classes. Because of limited funding and/or space, a given program may offer only one *Adult Reading* or *Adult Math* class creating classes with mixed ability levels.

**Open enrollment**: Many adult education programs have open enrollment policies and therefore accept students at any time during an instructional cycle. This results in an endless stream of new students, making many classes multilevel.

**Students' personal lives**: A variety of personal factors influence which classes students choose to attend. Such issues as transportation, child care, work schedules, and even friendships can cause students to enroll in one class (or school) over another. For these reasons, students sometimes choose to attend classes unsuited to their ability levels.

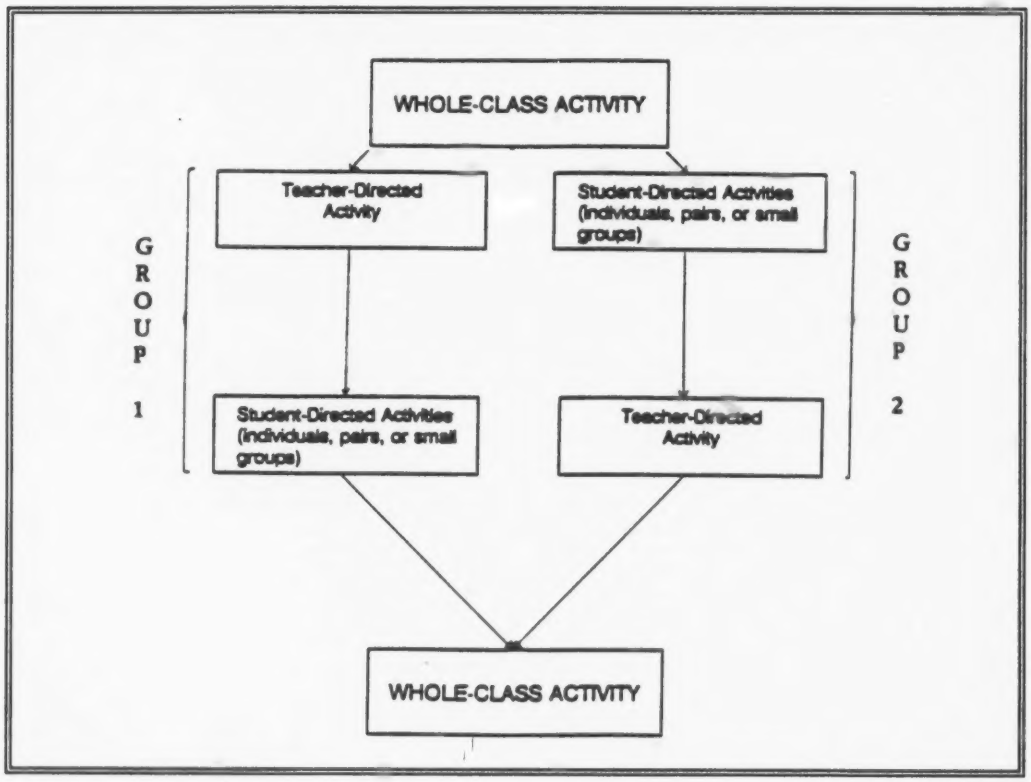
It is important for teachers of multilevel classes to realize that they have little or no control over the four factors described above. While teaching a multilevel class may seem overwhelming, there are some workable ways to handle multilevel instruction. Following are five practical multilevel classroom organizational plans.

## DIVIDE AND CONQUER

Figure 1 illustrates Divide and Conquer. The teacher begins the class with a whole-class activity in which all students participate. Students then divide into ability groups. (This model illustrates *two* alternating groups; however, the plan can be adapted to accommodate *three* alternating groups.) The teacher works with Group 1 while Group 2 is engaged in student-directed activities (either individually, in pairs, or in small groups). The teacher then moves to Group 2 to provide direct instruction while Group 1 works on student-directed activities. The class then concludes with another whole-class activity.

This model works especially well if a classroom aide is available. The role of the classroom aide is to monitor the student-directed activities as necessary, rather than to provide direct instruction.

FIGURE 1: DIVIDE AND CONQUER



**Advantages of Using "Divide and Conquer":**

- allows for focused, level-specific instruction
- provides opportunities for teacher/student interaction
- allows students to proceed at their own pace

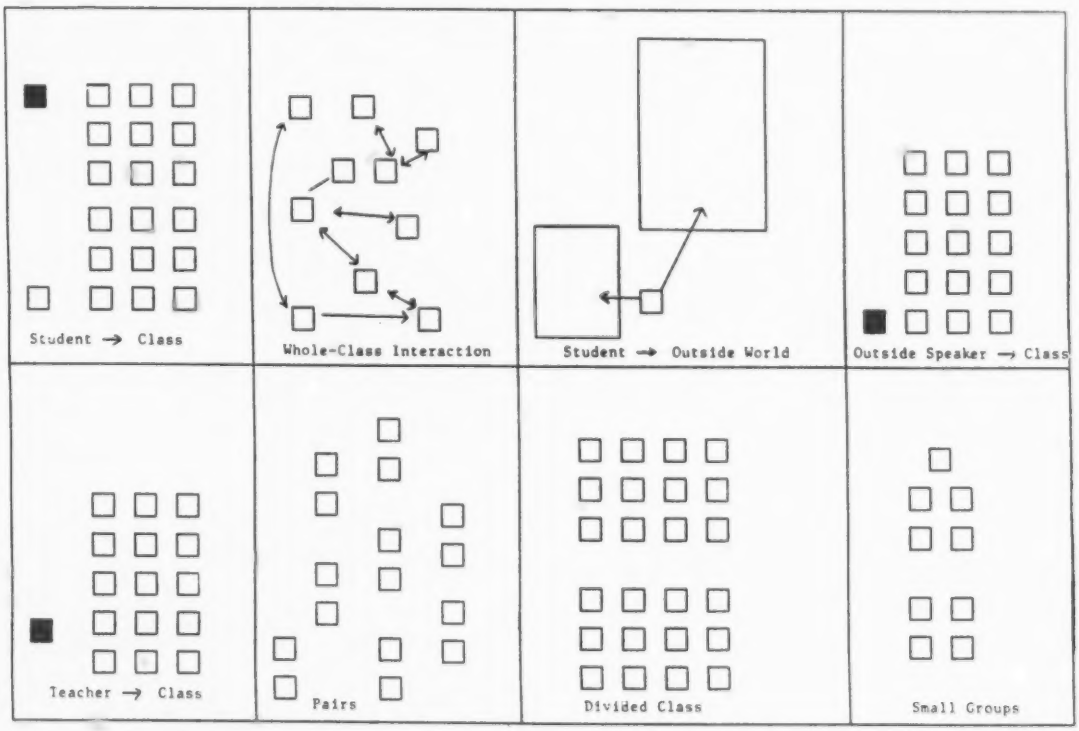
**Disadvantages:**

- requires extensive preparation
- may be difficult to develop meaningful student-directed activities
- publicly identifies students' ability levels

## FLEXIBLE GROUPINGS

A second method of organizing multilevel classes is the use of Flexible Groupings. In this alternative to the traditional teacher-centered classroom, students work in flexible groupings adapted to their skills and goals. Figure 2 illustrates the kinds of groupings that are possible in a multilevel class. Among these are pairs, small groups (three to five students), and divided classes. These groups may be teacher-led, student-led, or be interactions between students and persons from outside the classroom.

FIGURE 2: FLEXIBLE GROUPINGS



The groups and the group members vary as students' needs and interests change. Here are some typical structures:

TEACHER/CLASS

- presentation of new material
- review of previously taught material
- administration of tests

SMALL GROUPS

- brainstorming (before a reading or writing assignment)
- problem solving
- small group projects

PAIRS

- research in or out of class
- interviews
- reciprocal quizzing

DIVIDED CLASS

- debates
- competitions
- presentations

**Advantages of Using Flexible Groupings:**

- challenges students
- provides opportunities for student success
- appeals to a variety of teaching and learning styles

**Disadvantages:**

- not conducive to class unity
- materials are not easily leveled
- requires extensive planning and choreography on the part of the teacher
- makes it difficult to present content in a systematic manner
- some students are more comfortable in a traditional teacher-centered classroom

## INDIVIDUALIZED INSTRUCTION

Individualized instruction involves the tailoring of instruction to meet individual student's needs and goals. Two common approaches to individualized instruction are Self-Directed Learning and Programmed Learning:

Self-Directed Learning refers to the process in which a student and instructor negotiate short-and long-term goals. Together they decide on the goals and what means the student will use to achieve the goals. (e.g., reading assignments, written assignments, outside research). Each student has a folder to keep track of assignments. The teacher meets periodically with the student (usually within the class period) to look over the contents of the folder, review progress, formulate new goals, and make recommendations for further study.

Programmed Learning refers to using material (either in textbooks or on computer programs) that is presented in small, incremental steps with frequent, built-in comprehension checks. Students work individually and at their own pace. Students complete exercises or perform tasks for each assignment and then see the correct responses immediately. If the answers are correct, students move to the next step; if not, the text or program supplies more explanation and further practice.

### Advantages of Using Individualized Instruction:

- develops students' abilities to direct their own learning
- allows for specific, discrete skill development
- avoids comparison of students

### Disadvantages:

- limits student, student and teacher, student interaction;

## LEARNING STATIONS

Learning stations consist of separate tables set up with different learning activities for use by a multilevel class. Learning stations can be set up within the classroom, in an adjoining space, or in the school library. Each table is set up with a learning task addressing a specific skill or ability level.

Each learning station is equipped with written instructions on how to complete the task at that table. In addition, each station includes materials needed to accomplish the task (e.g., tape recorders, computers, reference books, or just pencil and paper). One or several students can work at each station while the teacher goes from station to station monitoring progress.

Reading/writing students might:

- use a collection of pictures to generate ideas for an essay
- answer a series of questions using specific reference books
- read a story, look at endings written by other students, and then write a new ending using a word processor

Math students might:

- solve math riddles
- use real objects to practice measuring skills
- play a computer math game

Learning stations are perhaps most successful when used occasionally to provide practice and variety within a multilevel class.

**Advantages of Using Learning Stations:**

- gives students choice in determining what to study
- gives students the option of working in groups or individually
- provides students with specific, goal-oriented materials
- allows for skill reinforcement

**Disadvantages:**

- requires self-motivated learners
- requires extensive preparation, materials, and space
- is not appropriate for introducing new material

**Volunteers or Classroom Aides**

Some programs use volunteers or classroom aides to assist with multilevel classes. Having a volunteer in the classroom can give teachers some much-needed flexibility and provides an extra hand when trying to meet the diverse needs of students in multilevel classes.

It is important for teachers and volunteers to discuss their expectations before entering the classroom. Teachers should provide volunteers with meaningful, well-planned duties, and positive feedback. In turn, volunteers should be responsible and committed to the goals of the program.

**Advantages of Using Volunteers:**

- allows instructors to individualize instruction
- greatly facilitates group work

**Disadvantages:**

- volunteers may not be fully committed to the program (consequently there may be problems with absent or late volunteers)
- requires advance preparation on the part of both teacher and volunteer
- volunteers may not be sufficiently skilled to accomplish certain tasks

There is no one way to satisfactorily manage a multilevel class. Depending on teaching style, available resources, and student needs, instructors should choose and adapt the options described in this section so that they can best meet the requirements of their particular programs. In any class, multilevel instruction will encourage flexibility in teaching and offer instructors the opportunity to utilize and enjoy the various skills of their students.

# COOPERATIVE LEARNING

Cooperative learning encourages students to take an active role in their own education. Cooperative learning is not new. Individuals have always worked together in groups to reach common goals and solve common problems.

Cooperative learning in the classroom:

- protects students' self-esteem
- develops the ability to work independently (which is increasingly important in today's society)
- promotes students' involvement in the learning process
- allows students' to share the wealth of knowledge and life experiences adults bring to the classroom

In a cooperative learning environment, students may work in pairs, in small groups, or in a combination of both giving each other immediate feedback, support, and reinforcement. Limited cooperation may only involve students quizzing each other or comparing and checking worksheets. More intense cooperation focuses on critical thinking skills requiring students to question and probe ideas and seek application of information to real life issues.

Cooperative learning is ideal for multilevel settings. It can be an alternative or an addition to the more common method of working with multi-level classes in which the teacher instructs one group of students while assigning seat work to the rest. Students may work in small groups according to skill levels with different groups working on the same topic or skill, each at their own level of development. When developing story problems, for example, some students may be working on fractions, some with whole numbers, while still others might be working on decimals.

Much of the success of cooperative learning depends upon individual members. Each member of the group needs to be an active participant, sharing ideas and practicing skills. Putting time limits on activities helps to keep individual students and groups on task and gives students the responsibility of monitoring their own activities. Keeping groups small - pairs often work best with beginning groups - also helps to insure that each member of a group participates fully.

Carefully structuring activities helps to promote individual accountability and allows students with different skill levels to work together. Assigning roles (interviewer, interviewee, observer, moderator, recorder) to group members can promote cooperative interdependence.

**Assessment and evaluation** of learning is a key component of cooperative learning. Teachers need to stay in touch with the progress of groups as a whole and individuals within the group. Care should be taken to make sure that class and group spirit is encouraged. Using grades or signaling out problem students will increase competitiveness and dissension in the group and ultimately make further cooperative learning activities impossible. Assessment should focus on each members' contribution to the group as well as how effectively instructional goals were achieved. Evaluation activities which allow students to practice and demonstrate skills they learned are often the most effective. Assessment tools that can be used include:

- group progress reports and work plans
- quizzes and worksheets
- observation of groups at work
- group interaction checklists and reports
- group discussion
- projects, presentations, and reports
- tests
- self-evaluation

Whatever assessment method is chosen, it should reflect the goal of group problem solving and skill development.

## INSTRUCTIONAL STRATEGIES FOR COOPERATIVE LEARNING

### JIGSAW

One way to structure positive interdependence among group members is to use the jigsaw method. Information is divided into sections so that each member has one part. For instance, the study of a city could be broken down into history, tourist attractions, political structure, and demographics. Each team member would study one section and report back to his group.

**How to use Jigsaw:**

1. Break the class into groups of four.
2. Each individual in a group is assigned a number one through four.
3. All the number ones study one section of the information, all the number twos another and so-forth until all members are assigned a portion of the material to be studied.
4. Each team member studies his or her own section.
5. Students who have studied the same sections meet in *expert groups* to discuss and expand what they have learned.
6. Original groups reform.
7. Students take turns teaching their teammates their areas of expertise.

**THINK-PAIR-SHARE**

Students listen while the instructor poses a question. Then, they are given a chance to think of a response. Students pair with one another to share their thoughts. A final step may be to have students share their responses with the whole group.

**How to use Think-Pair-Share:**

1. Students participate in a teacher lead discussion on a particular topic.
2. The instructor poses a question to the entire class.
3. The instructor gives students some time to think about the question on their own.
4. Each student pairs with another student.
5. Student pairs share ideas that were generated by the question.
6. Students share ideas with original group, after getting input from their partner.

## ROUNDTABLE

In Roundtable, an idea is developed by passing it around a circle of students. Students may respond orally or in writing.

**How to use Roundtable:**

1. The instructor poses a question that has many possible answers.
2. Students then make a list on one piece of paper, each writing one answer, and then pass the paper to the next person in the group.
3. This process may be repeated allowing the paper to go *around the table* a number of times.
4. Ideas from various groups can be recorded using a flip chart or overhead.

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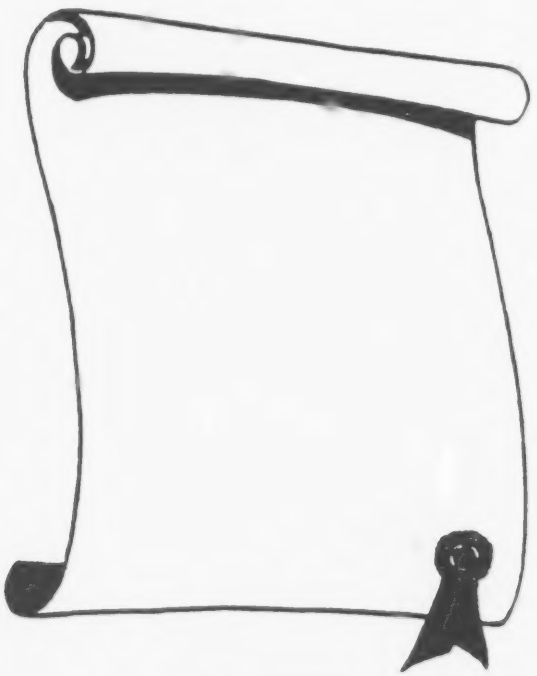
# THE GED TEST



# TEST OVERVIEW

The General Education Development (GED) Testing Program offers adults 18* and older who have not completed high school (and whose class has graduated) the opportunity to earn a high school equivalency certificate from the State of Illinois. The GED Tests are used to assess skills representative of a traditional high school education in the United States and Canada. Test performance is evaluated relative to the demonstrated achievement of a representative sampling of graduating high school seniors. Illinois candidates must pass a series of five content area tests and the Constitution Test which examines knowledge of both the U.S. and Illinois Constitutions, the Declaration of Independence, and the U.S. flag code. Since 1971, the GED Testing Program has enabled nearly six million adults to obtain formal recognition of educational development through their attainment of a high school equivalency credential. This credential satisfies the diploma requirements of more than 90% of colleges and universities in the U.S., Canada, and of most employers for a secondary level diploma.

## ADMINISTRATION

The Illinois State Board of Education is authorized by Illinois law (school code 3-15.12) to implement the GED Testing Program. The Regional Superintendent of Schools shall make available for qualified individuals residing within the region a High School Equivalency Testing Program. For that purpose the regional superintendent alone, or with other regional superintendents, may establish and supervise a testing center or centers to administer the secure forms of the GED Test to qualified persons. These centers will be supervised by the regional superintendent in which region the center exists, subject to the approval of the State Board of Education. Additionally, the American Council on Education makes recommendations to the State Board of Education on policies and procedures related to the GED Testing Programs.

There are approximately 80 test sites in Illinois. "An individual is eligible to apply to the regional superintendent of schools for the region in which he/she resides if he/she is: (a) a person who is 18 years of age or older, has maintained residence in the State of Illinois for a minimum of 30 days and is not a high school graduate, but whose high school class has graduated; (b) a member of the armed forces of the United States on active duty who is 17 years of age or older and who is stationed in Illinois or is a legal resident of Illinois; (c) a ward of the Department of Corrections who is 17 years of age or older or an inmate confined in any branch of the Illinois State Penitentiary or in a

*When registering to take the GED, 18 year olds must present a letter of verification from their high school.*

county correctional facility who is 17 years of age or older; (d) a female who is 17 years of age or older who is unable to attend school because she is either pregnant or the mother of one or more children; or (e) a male 17 years of age or older who is unable to attend school because he is a father of one or more children. For purposes of this Section, residence is that abode which the applicant considers his/her home. Such regional superintendent shall determine if the applicant meets statutory and regulatory state standards " (Illinois school code, 3-15.12).

The GED tests are offered in English, Spanish, French, and in Braille or in large print for the visually-impaired and in audiocassette format for those with additional special needs. Special accommodations can be requested for special needs candidates, but specific guidelines must be followed and approved by the GED Testing Service in Washington, DC. For more details, contact your local program administrator. The Illinois Adult Learning Hotline (1-800-321-9511) provides information regarding the GED testing locations.

If qualified, each candidate must pay an application fee of ten dollars when registering for the GED Test. In addition, there is a separate fee of ten dollars for issuance of the high school equivalency certificate upon successful completion of these exams as established by the State Board of Education. The candidates will be notified in writing by the regional superintendent that they have passed the GED examinations.

## SCORING

The scores on the five GED tests are called standard scores. These mathematically-derived scores allow an individual's scores to be compared to the performance of thousands of high school seniors (selected on a sampling basis) who took the GED Tests just before graduation.

In Illinois, an examinee must receive a minimum standard score. (Standard score is derived from the number correct score) of thirty-five (*35*) on each of the five tests **AND** an overall average of forty-five (45). The *five standard scores* added together must equal at least two hundred twenty-five (*225*). For example, if an examinee earns standard scores of 30, 35, 30, 40, and 30 respectively, the following interpretive statement can be made: on three of the tests the candidate earned a standard score of 30. That is below the minimum Illinois requirement of 35 and the candidate needs to retest on those three individual tests or has the option to retake the entire battery again. In discussing retesting, it is important to let candidates know that when the test is retaken, the highest score received on each test will be the one that counts. This is, therefore, an incentive to retake the whole battery.

## GED TEST

| TEST | NUMBER OF ITEMS | TIME LIMIT (minutes) | CONTENT AREAS |
|---|---|---|---|
| 1. Writing Skills | 55 | 75 | Part I: Sentence Structure 35%<br>Usage 35%<br>Mechanics 30% |
| | | 45 | Part II: Essay |
| 2. Social Studies | 64 | 85 | History 25%<br>Geography 15% (Canada 20%)<br>Economics 20%<br>Political Science 20%<br>Behavioral Science 20% (Canada 15%) |
| 3. Science | 66 | 95 | Life Science (Biology) 50%<br>Physical Sciences 50%<br>- Earth Science<br>- Physics<br>- Chemistry |
| 4. Interpreting Literature and the Arts | 45 | 65 | Popular Literature 50%<br>Classical Literature 25%<br>Commentary 25% |
| 5. Mathematics | 56 | 90 | Arithmetic 50%<br>- Measurement<br>- Number Relationships<br>- Data Analysis<br>Algebra 30%<br>Geometry 20% |

* *Note: The Constitution Test is the only untimed portion of the GED Battery.*

## INSTRUCTIONAL OVERVIEW OF THE CONTENT AREAS

The GED Tests require more than recognition and simple recall. In order to successfully complete these test items the GED Testing Service (GEDTS) has adapted the critical thinking skills outlined in Bloom's Taxonomy of Educational Objectives (Bloom et.al., 1956). Bloom's model is a hierarchy of higher level thinking skills that demonstrates how to teach students to get beyond simple recall and recognition and develop critical thinking abilities such as application, synthesis, inference, and analysis. Test items classified at the highest cognitive levels (e.g.,analysis, synthesis, and evaluation) require the use of skills described at the lower levels (e.g., knowledge and comprehension). The following is a breakdown of the skills required on each test:

## THE GED TEST COGNITIVE LEVELS

**TEST 1: WRITING SKILLS, Part I:**

APPLICATION
RECALL

**WRITING SKILLS, Part II:**

SYNTHESIS

**TESTS 2 & 3: SOCIAL STUDIES & SCIENCE:**

| | |
|---|---|
| EVALUATION | - 20% OF TEST ITEMS |
| ANALYSIS | - 30% OF TEST ITEMS |
| APPLICATION | - 30% OF TEST ITEMS |
| COMPREHENSION | - 20% OF TEST ITEMS |

**TEST 4: INTERPRETING LITERATURE AND THE ARTS:**

| | |
|---|---|
| ANALYSIS | - 25% OF TEST ITEMS |
| APPLICATION | - 15% OF TEST ITEMS |
| COMPREHENSION | - 60% OF TEST ITEMS |

**TEST 5: MATHEMATICS:**

REQUIRES SKILLS RANGING FROM COMPREHENSION TO EVALUATION, THE MAJORITY REPRESENTING APPLICATION

## TEST 1: WRITING SKILLS

The GED Writing Skills Test consists of two sections. Part I is a multiple-choice section that measures one's ability to edit sentences within the context of one or more paragraphs of extended discourse. Part II measures one's ability to write an essay about a familiar subject or relevant issue.

The Writing Skills Test requires the following competencies:

- recognize common misspellings and spell high-frequency words correctly
- understand and use correct sentence structure (Standard Written English)
- understand and use logical paragraph organization
- understand essay structure and use it to write a well-organized essay
- know the rules of capitalization and punctuation and apply them to writing
- know the conventions of grammar and usage and apply them to writing
- be familiar with the format of questions in Part 1 of the GED Writing Test and be able to answer questions in that format
- understand and apply a system for planning, writing, and revising an essay

### Part I:

This section of the test consists of multiple-choice questions presented in the context of paragraphs about such topics as consumer affairs, career skills, and computer awareness or topics of more general interest such as vacations, health, family life, and education. When corrected or edited, these paragraphs serve as models of effective writing. Examinees apply the rules of sentence structure and usage to errors within the paragraphs. The tasks within this section become increasingly more difficult as the need to apply principles increases in importance. Generally, the more information that is missing from the sentence, the more the examinee must provide, and, therefore, the more difficult the item becomes.

### Part II:

This section of the test measures a different dimension of the examinees' writing skills by having them write an original composition based on a single expository topic. The essay test measures skills at the cognitive level of synthesis. It requires the production of ideas rather than the comprehension or analysis of ideas, and it is an important distinction that separates the essay section from all other tasks within the GED Test battery.

The topics are based on an issue or a situation of general interest about which adults would be expected to have some knowledge. Examinees are advised to "state a view, present an opinion," or "explain why or how" All topics are expository in nature and require the examinee to explain the nature of an object, an idea, or a theme.

The directions in this section encourage examinees to use all parts of the writing process: to plan, draft, and make revisions and corrections. Also included are the guidelines the evaluators follow to score the essays.

### Essay Scoring

All essays are scored holistically by trained readers. Holistic scoring means trained GED readers evaluate papers according to overall effectiveness. Readers do not count the number of errors but, rather, evaluate all of the elements that contribute to the essay's overall impression including clarity, structure, context, mechanics, the use of Standard Written English, and how well the examinee addressed the topic.

The scoring scale ranges from one (low) to six (high) and all essays are read by at least two readers. If they do not give the piece the same score, a third reader is required. One of the advantages of working with a six-point scale is that it has no midpoint. Readers are forced to avoid a natural tendency to assign scores in the middle of the scale. Readers must decide if a paper has the characteristics of an upper-half or a lower-half essay. If an examinee writes an essay off-the-topic or makes no attempt at all to write an essay, no score is assigned and the examinee must retake Test 1. Prepare students for the GED essay test by familiarizing them with the scoring guide used in order for students to understand the standards by which their essays will be evaluated. Students should practice ranking sample papers to focus on the elements of good writing. Sample papers and the GED Essay Scoring Guide can be found in the Appendix at the end of this handbook.

## CLASSROOM STRATEGIES

To prepare students for the Writing Skills Test, writing instruction should focus on *prewriting, composing, and postwriting strategies.* Sentence structure and language mechanics should be developed within the context of the student's own writing and not isolated workbook drill (see Writing, page 51).

## GED TESTS 2, 3, 4: SOCIAL STUDIES, SCIENCE, LITERATURE AND THE ARTS

The Social Studies, Science, and Literature and the Arts sections test understanding and analysis rather than simple recall. Passing scores in these three content areas are dependent on well-developed reading ability. Students must be able to:

- comprehend literal meaning
- comprehend inferential meaning
- read a passage and apply the information or ideas
- analyze social studies/science information
- analyze literary elements of style and structure in literature
- evaluate social studies/science information

*(Adapted from Washington State Core Competencies, Model Curriculum, William Sperling, Project Director, 1991.)*

## TEST 2: SOCIAL STUDIES

Of the five content areas of the GED Test, adult learners are often the most comfortable with Social Studies. They are familiar with and have a basic understanding of geography, economics, behavioral sciences, and political science. Teachers can capitalize on the fact that most adults come into contact with social studies issues by listening to the news on television or radio; reading the newspaper; or becoming involved in school issues, local or national politics, and the economy. There are many resources for materials and methods to teach or reinforce important skills and concepts within this subject area.

### Instructional Overview

Test 2 measures the ability to read, comprehend and apply critical thinking skills in social studies topics. Questions address situations in which the individual is a citizen, worker or consumer, and a member of social groups ranging in size from the family to the local, national, and global communities. The content of Test 2 described in this handbook is from the U.S. version; the Canadian and Puerto Rican (Spanish) versions are characteristic of those locations and the percentages of content areas may be slightly different.

### Graphical Literacy

Graph reading is an important feature of this test; 20% to 40% of the test includes graphic material. In general, the more complex the graphic material, the greater the number of test items that accompany it. Topographical, economic, political, and historical maps are included. The examinee must interpret information provided by the graphics, apply information, concepts and principles, explore relationships among ideas, make judgements, draw conclusions, and solve problems.

## TEST 3: SCIENCE

The subjects included in the items of the Science Test are based on the life sciences (biology) and the physical sciences (earth sciences, physics, chemistry). Test items are related to general concepts from all disciplines of science. Attention has been paid to provide test items that will be familiar to examinees in contexts that emphasize:

- applications of science to daily life
- issues concerning the natural environment
- the potential and the limitations of science in explaining natural phenomena
- the relationships between science, educational skills, and work activities

Themes included are change, conservation of mass and energy, interactions, relationships, and time and space. It is important to note that this exam requires the examinee to use the information provided or acquired from past education or life experience to evaluate, analyze, apply, and comprehend. Graphic material comprises from 20% to 40% of this test and is used in both single items and for item sets. As with the Social Studies Test, the more complex the graphic materials, the greater the number of items that accompany it.

## TEST 4: INTERPRETING LITERATURE AND THE ARTS

The content of this test is drawn from three content areas: Popular Literature, Classical Literature, and Commentary. American, Canadian, and English authors predominate but translations from world literature are also represented. The percentages of materials are as follows: Popular Literature (50%), Classical Literature (25%), and Commentary (25%). This test measures the examinees' ability to comprehend, apply, and analyze literary selections.

The Popular Literature section includes fiction, prose nonfiction, poetry, and drama. The fiction selections are excerpts from novels or short stories found in popular books and magazines. Prose nonfiction includes selections from journals, travelogues, essays, criticisms, biographies, and major newspapers. Poetry pieces consist of short contemporary poems or excerpts from longer poems. Drama selections are chosen from playwrights not thought of as *classical* as defined in the classical section.

Classical Literature includes fiction, prose nonfiction, poetry, and drama. Classical literature is defined as "a piece of literature which by common consent has achieved a recognized position in literary history for its superior qualities; also an author of similar standing". (Holman, *GEDTS,* 1972) Test items for this section draw from nineteenth and twentieth-century works of recognized literary merit.

Commentary selections include writings about literature and the arts in the form of comments, criticisms, or reviews of television, film, literature, dance, art, music, sculpture, and theater. Commentary materials are informational or descriptive in nature. It is not assumed that the examinee will have prior knowledge of an artist's work in order to answer or analyze the material.

The cognitive level classification items measure the examinee's skill ability to comprehend (60%), apply (15%), and analyze (25%) specific content areas within this test. There are two types of comprehension items in this test: literal and inferential. The literal comprehension items measure the examinee's ability to restate information, and restate or summarize ideas. Inferential comprehension items measure the ability of the examinee to identify implications, understand consequences, and draw conclusions. Again, this test is based on the higher level critical thinking skills as modeled in Bloom's Taxonomy.

The reading selections in Test 4 range in length from 200 to about 400 words. The level of difficulty is carefully monitored to equal the ability level of an average high school student. Each piece represents works that have a clear beginning, middle, and end and are appropriate to the lives of adults. Prior to each reading, a brief, but carefully constructed purpose question is included in order to give a reason or focus for reading to the examinee. It is meant to evoke interest and engage the reader in order to reduce the artificiality of the exercise for the reader.

## TEST 5: MATHEMATICS

The subject matter for the mathematics test is adapted from three areas: arithmetic, algebra, and geometry. Fifty percent (50%) of the test is based on arithmetic which includes number relationships, measurement, and data analysis. Algebra is 30% of the test, while geometry makes up the last 20% of the test items. Many of the problem solving skills measured in the mathematics test cross the boundaries of other content areas. The skills involved in organizing information in a problem and defining the proper sequencing of steps can be applied to other areas besides mathematics. Because many of these skills cross content areas (e.g., social studies and science), between 30% and 40% of each test form is comprised of items that can be solved by using ratio and proportion techniques. (Also, the ability to apply a formula is represented in all content areas.)

The items in this test require skills ranging from comprehension to evaluation. Examinees must comprehend the stimulus material and be able to apply their mathematical knowledge and problem-solving skills. The focus is not on how well the examinee can perform complicated calculations, but rather on the processes necessary to solve problems.

This sequential process is described by the GEDTS as follows:

1. Identify what is asked and what information is provided.
2. Devise a plan to solve, using previously acquired information.
3. Carry out the plan, estimate first and calculate only if necessary.
4. Look back, reconsider, and estimate; use common sense.

Not all test items ask the examinee to calculate the problem. 25% of the items ask examinees to select the best approach for solving the problem. These are called *set-up* problems. Several items include extraneous or insufficient data. The effective problem solver will recognize these different items and competently handle these questions.

All test items are in the form of word problems that represent realistic adult situations. Items deal with the world of work, the consumer, computer technology, family situations, etc. A formula page is included in every test. Approximately 15% of the test items will use a formula. Two-thirds of the items have only written stimuli; one-third have graphic stimuli preceded by a brief written explanation. The application of Bloom's higher level critical thinking skills is again the focus of this test as with the previous tests.

The list of mathematics competencies emphasizes the *use* of computational skills to solve problems rather than the rote mastery of those skills. Entering GED students are expected to have the ability to manipulate whole numbers, decimals, and fractions and will need to apply that ability and computational skill to a GED (or high school level) context. In order to successfully complete Test 5, GED students will need to master the following:

**Mathematical competencies:**

- solve a variety of multi-step whole number word problems
- solve a variety of multi-step decimal word problems
- solve a variety of multi-step fraction word problems
- use ratio and proportion to solve a variety of word problems
- solve a variety of multi-step word problems involving percentages
- convert and compute measurements and solve multi-step word problems involving measurements

- analyze and interpret a variety of tables and graphs and draw conclusions from data presented
- use algebraic expressions and simple equations to solve a variety of word problems
- solve a variety of problems involving plane and solid geometry

*(Adapted from Washington State Core Competencies, Model Curriculum, William Sperling, Project Director, 1991.)*

An essential problem-solving skill for the GED student is the ability to know how to estimate. Instructors need to increase opportunities for students to use mental math or estimating strategies and move away from pencil-and-paper calculations. Students can use this skill in daily life and should be encouraged to apply this skill to the problems they encounter in the classroom and in the test. Encourage students to ask, "Does this conclusion make sense?" or "Is this answer reasonable?"

## STRATEGIES FOR TEACHING CRITICAL THINKING FOR ALL GED TESTS

Adults apply, analyze, synthesize, and evaluate in their everyday lives. However, they may not be able to transfer these skills to an academic or testing situation. It is important that the instructor focus on helping students learn how to develop and apply these critical thinking skills in order to meet with success on the GED tests.

This can be accomplished by helping students develop their reasoning skills. Two common weaknesses in reasoning skills are:

1. Jumping to conclusions before giving it sufficient thought.
2. Giving into frustration when a situation becomes too difficult and not struggling through to the end.

There are many teaching methods for improving thinking skills. The following process model is an adaptation of the *Guided Design* as described by the GEDTS.

### THE PROCESS MODEL

The goal of this process is to get students involved in solving problems that require higher level thinking skills and which represent items on the GED tests. This process can be used with students individually, in small groups, in whole class groups, or any combination of these. The one critical element is that every student must be actively involved.

Each of the following steps is really a small-scale problem by itself. One of the tasks of the instructor is to identify or construct exercises that require appropriate subject area knowledge and that use a variety of higher level thinking skills. The steps include the:

1. identification and clarification of the nature of the problem
2. identification of information needed
3. generation of possible strategies and solutions
4. solution of the problem
5. evaluation and checking of the solution

One commonality among the five GED tests is the idea of using information and skills. That is, acquiring information in a certain content area is only the beginning step in order to succeed on the GED tests. Classroom materials and teaching methods should focus on providing opportunities for students to use the information learned in the subject areas to restate, summarize, extrapolate, analyze, and evaluate. Incorporating reading and writing to develop critical thinking across all subject areas is an excellent means to developing these skills. Even in the area of mathematics, the same techniques used to compose the expository essay can be used to create word problems that will be relevant to the students because they are their own creation. The process model can be used as an outline or format in structuring these problems.

## OFFICIAL GED PRACTICE TESTS

Most students will benefit from practice in taking a test. This enables the examinee to control anxiety and become better prepared for the actual tests. The GEDTS has accommodated the GED candidate by providing English, Spanish, and audiocassette versions of the Official GED Practice Tests. Only one textbook publisher is awarded the contract through the bidding process to print the GED Practice Tests for the GEDTS. The most current GED Practice Tests published are Form CC and Form DD.* See the bibliography for more information.

The Practice Tests include actual GED test items that were not included in the final versions. Therefore, the students' performance on the practice tests is indicative of their success on the actual exam. This can be a great benefit to both student and instructor in order to identify strengths and weaknesses and facilitate educational goal planning.

* Steck-Vaughn Company, Austin, TX.

## SOURCES AND USEFUL REFERENCE


The Official Teacher's Guide to the Tests of General Educational Development. 1988. GED Testing Service, the Center for Adult Learning and Educational Credentials, American Council on Education. Chicago: Contemporary Books.

Official GED Practice Tests, Forms AA, BB, CC, DD, English Editions. Form AA in Spanish, French, and Large Print Editions; Form DD (English only) in Audio Edition. Austin, TX: Steck-Vaughn Company.

Complete GED Preparation. 1991. Austin, TX: Steck-Vaughn Company.

GED Test Accommodations for Candidates with Specific Learning Disabilities. 1990. Washington: GED Testing Service, Center for Adult Learning and Educational Credentials, American Council on Education.

Illinois Association of School Boards. 1990. 1990 Illinois School Code. St. Paul: West Publishing.

Curriculum Update: An Adult Basic Education Curriculum, 353 grant project #89-98-0030. Jeffrey C. Woodyard, Project Director, Victoria A. Hoffman, Project Developer. Pennsylvania Department of Education, 1990.

CORE Competencies, Model Curriculum: Adult Basic Education, GED Test Preparation. Adult Basic and Literacy Educators, William N. Sperling, Project Director. Washington State, 1991.

# TEST TAKING STRATEGIES

We all face unavoidable testing situations at various times in our lives, and many people also experience a significant degree of test anxiety. This stress can result in an uncharacteristic, negative outcome on tests which does not reflect an individual's true ability. People who experience extreme anxiety when faced with a test may see testing as a personal threat and feel that they always do poorly. Understanding how to take tests can go a long way toward helping students develop confidence in test-taking situations which, in turn, will alleviate much of the stress and anxiety.

Instructors can help their students develop a positive attitude toward testing, an understanding of how tests work, and an understanding of how to monitor and control their responses physically, emotionally, and mentally toward tests. Here are some test-taking tips:

**Before the test:**

- study in short intervals, if appropriate, but do not cram
- relax as much as possible
- get a full night of sleep the night before
- eat a nourishing meal prior to the test
- adopt a positive attitude; imagine yourself succeeding

**When taking multiple choice tests:**

- read directions carefully
- read questions carefully
- note key words or clue words
- read all options
- read questions before reading any content passages
- study visuals such as graphs and charts prior to reading questions
- eliminate obvious incorrect answers
- try not to second guess yourself; be confident

**When taking essay tests:**

- note number of parts to the question
- write legibly
- stay on the topic in question
- jot down ideas in margin or on scrap paper as you read the question
- state main idea clearly and simply
- organize supporting details and provide sufficient explanation
- make a summary statement
- proof read what you wrote
- make sure your response answers the essay question

## SOURCES AND USEFUL REFERENCES

Filippo, Ronna. Test Wise: Strategies for Success in Taking Tests. Belmont, CA: Daniel S. Lake Pub.

Curriculum Associates. 1990. Test Ready.

# APPENDIX

## PROFESSIONAL ORGANIZATIONS AND PUBLICATIONS

### AAACE (American Association for Adult and Continuing Education)

AAACE
Suite 420
1112 16th Street, NW
Washington, D.C. 20036

$105.00 (professional full-time)
$35.00 (professional part-time)

Membership includes a subscription to *Online with Adult and Continuing Educators.*

### IACEA (Illinois Adult and Continuing Educators Association)

Chuck Boydstun
c/o IACEA Membership
2120 17th Street
Rock Island, Illinois 61201-4438

$35.00 (professional full-time)
$20.00 (professional part-time)

IACEA Publishes a bi-monthly newsletter and holds annual conferences. Members are encouraged to join special interest sections.

### ILLINOIS TESOL/BE (Illinois Teachers of English to Speakers of Other Languages/Bilingual Education)

Marcia LeRoy, Executive Secretary
Illinois TESOL/BE
English Language Program
Northeastern Illinois University
5500 North St. Louis
Chicago, Illinois 60625

$16.00 (regular)
$8.00 (student)

Illinois TESOL/BE provides workshops and conferences for teachers, as well as a newsletter with articles written by professionals in the field. Members are encouraged to join special interest sections such as the Adult Education Interest Section.

## TESOL (Teachers of English to Speakers of Other Languages)

TESOL
1600 Cameron Street
Suite 300
Alexandria, Virginia 22314

$42.00 (individual)
$22.00 (student)

Membership includes: a subscription to the TESOL Quarterly (a journal of interdisciplinary research and application); TESOL MATTERS (a newspaper featuring information on members, committees, affiliates, and professional events); and the TESOL Journal (a publication devoted to practical classroom concerns).

## IRA (International Reading Association)

International Reading Association
800 Barksdale Road,
P.O. Box 8139
Newark, Delaware 19714-8139

$38.00 (includes choice of one journal)
$55.00 (includes choice of two journals)
$75.00 (includes choice of three journals)
$90.00 (includes choice of four journals)

Journal Choices include: The Reading Teacher (preschool/elementary); Journal of Reading (adults/adolescent); Reading Research Quarterly; Lectura Vida (Spanish)

## REMEDIAL AND SPECIAL EDUCATION

Remedial and Special Education is a journal that bridges the gap between theory and practice, with emphasis on interpretation of research and specific recommendation for instruction for special needs students.

$80.00 (six issues per year)

Pro-Ed Journals
8700 Shoal Creek Boulevard
Austin, Texas 78758-6897

# ACRONYMS

| | |
|---|---|
| ABE | Adult Basic Education |
| ASE | Adult Secondary Education |
| CBO | Community Based Organization |
| DORS | Department of Rehabilitation Services |
| ESL | English as a Second Language |
| GED | General Educational Development (High School Equivalency) |
| GEDTS | General Educational Development (High School Equivalency) Testing Service |
| IDPA | Illinois Department of Public Aid |
| INS | Immigration and Naturalization Services |
| ISBE | Illinois State Board of Education |
| JTPA | Job Training Partnership Act |
| LEA | Local Education Agency |
| LEP | Limited English Proficiency |
| PEP | Potentially English Proficient |
| RFP | Request for Proposal |
| SLIAG | State Legalization Impact Assistance Grant |
| SOS | Secretary of State |
| TESOL | Teaching English to Speakers of Other Languages |

## PERCEPTUAL STYLES INVENTORY

___ 1. I remember what I hear.

___ 2. When something is hard to understand, I want to talk it through.

___ 3. I learn best by working and talking with others.

___ 4. I usually like class discussions.

___ 5. I appreciate teachers who take time to explain things.

___ 6. I am easily distracted by sound.

___ 7. I often vocalize the words when I am reading.

___ 8. I sometimes say things aloud several times to memorize them.

___ 9. When someone tells me something, I remember it.

___ 10. I find it hard to work quietly for a long period of time.

___ 11. I find it easier to remember something when I can picture it in my mind.

___ 12. When following directions, I like to see the words written down.

___ 13. I like to see pictures of what is being described.

___ 14. I need an organized environment in which to work.

___ 15. Diagrams and charts help me understand and remember information.

___ 16. I remember best when I write information over and over.

___ 17. I like it when instructors present information on an overhead or on the chalkboard.

___ 18. I review and study material by reading over notes and by recopying information.

___ 19. It is easy for me to remember faces.

___ 20. I am good at doing jigsaw puzzles.

___ 21. I like to be active.

___ 22. I find it hard to sit still for long periods of time.

___ 23. I like to do projects and make things.

___ 24. I like to do repairs around the house.

___ 25. I like to be able to touch things I am learning about.

___ 26. I learn and work better when I am able to move around.

___ 27. I usually start doing before I read the directions.

___ 28. I am good with my hands.

___ 29. I sometime take a lot of notes or doodle to keep my hands busy.

___ 30. I enjoy simulated activities in the classroom.

SCORING

Number checked in statements 1-10 ___ (Auditory Learner)

Number checked in statements 11-20 ___ (Visual Learner)

Number checked in statements 21-30 ___ (Tactile/Kinesthetic Learner)

GED Testing Service
American Council on Education
One Dupont Circle, N.W.
Washington, D.C. 20036
(202) 939-9490

Steck-Vaughn Company (Current publisher of GED Practice Tests)
P.O. Box 26015
Austin, Texas 78755
1-800-531-5015

Test of Adult Basic Education (TABE)
CTB McMillan/McGraw Hill
2500 Garden Road
Monterey, California 93940
1-800-538-9547

GED Hotline
1-800-SAY-GET IT

## GED Regional Superintendent Offices

### REGION I

Cook: Hon. Richard J. Martwick
Room 402
50 W. Washington
Chicago, IL 60602
(312) 443-6350

Lake: Hon. Sybil Yastrow
Room A-904
18 N. County Street
Waukegan, IL 60085
(708) 360-6313

### REGION II

Boone/Winnebago:
Hon. Richard Fairgrieves
300 Heart Blvd.
Loves Park, IL 61111
(815) 636-3080

DeKalb: Hon. Thomas Weber
2301 Sycamore Road
DeKalb, IL 60115
(815) 758-6661

DuPage: Hon. Berardo J. DeSimone
421 County Farm Road
Wheaton, IL 60187
(708) 682-7151

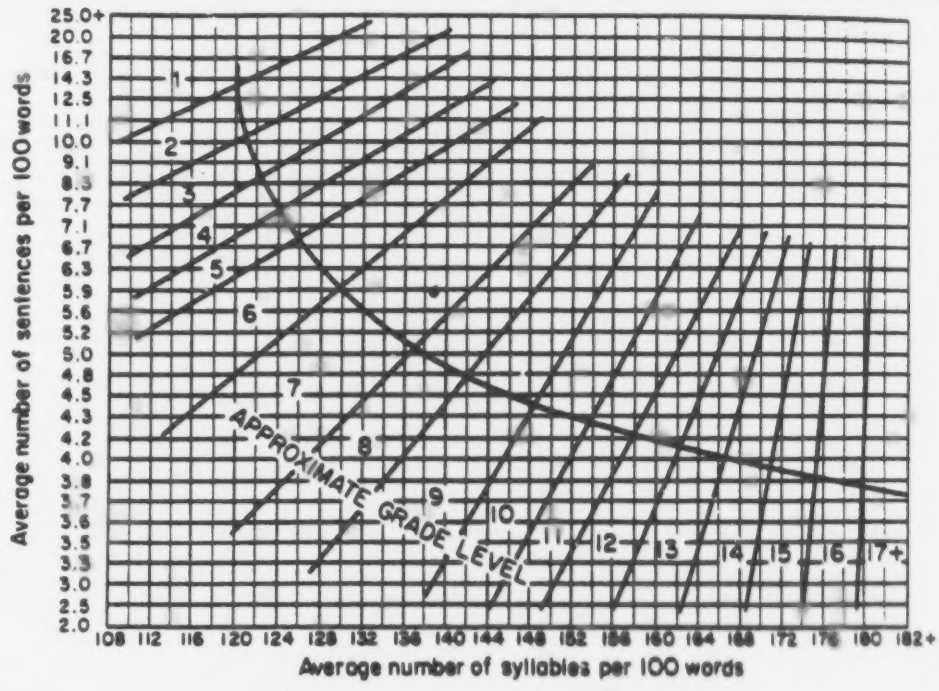
Kane: Hon. Douglas L. Hoeft
719 Batavia Ave., Building C
Geneva, IL 60134
(708) 232-5955

Lee: Hon. Thomas J. Coffey
Lee County Courthouse
Dixon, IL 61021
(815) 288-4405

McHenry: Hon. Leslie Hellemann
2100 N. Seminary Street
Woodstock, IL 60098
(815) 338-2440

Stephenson:
Hon. Marvin L. Maaske
Courthouse
15 N. Galena Avenue
Freeport, IL 61032
(815) 235-8262

Whiteside: Hon. Gary J. Steinert
200 East Knox - Courthouse
Morrison, IL 61270
(815) 772-5104




**Expanded Directions for Working Readability Graph**

1. Randomly select three (3) sample passages and count out exactly 100 words each, beginning with the beginning of a sentence. Do count proper nouns, initialization, and numerals.
2. Count the number of sentences in the hundred words, estimating length of the fraction of the last sentence to the nearest one-tenth.
3. Count the total number of syllables in the 100-word passage. If you don't have a hand counter available, an easy way is to simply put a mark above every syllable over one in each word, then when you get to the end of the passage, count the number of marks and add 100. Small calculators can also be used as counters by pushing numeral 1, then push the + sign for each word or syllable when counting.
4. Enter graph with *average* sentence length and *average* number of syllables; plot dot where the two lines intersect. Area where dot is plotted will give you the approximate grade level.
5. If a great deal of variability is found in syllable count or sentence count, putting more samples into the average is desirable.
6. A word is defined as a group of symbols with a space on either side; thus, *Joe, IRA, 1945,* and & are each one word.
7. A syllable is defined as a phonetic syllable. Generally, there are as many syllables as vowel sounds. For example, *stopped* is one syllable and *wanted* is two syllables. When counting syllables for numerals and initialization, count one syllable for each symbol. For example, *1945* is four syllables, *IRA* is three syllables, and & is one syllable.

| | | Syllables | Sentence |
|---|---|---|---|
| Example: | 1st Hundred Words | 124 | 6.6 |
| | 2nd Hundred Words | 141 | 5.5 |
| | 3rd Hundred Words | 158 | 6.8 |
| | Average | 141 | 6.3 |

READABILITY 7th GRADE (see dot plotted on graph)

# *ADULT EDUCATION SERVICE CENTER OF NORTHERN ILLINOIS*

The Adult Education Service Center of Northern Illinois offers staff development and inservice training to staff and administrators in Adult Basic Education (ABE), Literacy, GED, Adult Secondary Education and Spanish Literacy/ABE/GED programs.

## *SERVICES OFFERED BY THE CENTER:*

### *STAFF DEVELOPMENT AND WORKSHOPS*

Local and areawide training workshops and activities are available to Northern Illinois programs. In addition, a fall regional conference is held each year.

### *CONSULTATIONS/TECHNICAL ASSISTANCE*

Programs and individuals may request consultation services in English or Spanish for their particular program needs. Assistance is provided by phone, mail, and on-site consultant visits. In addition, individuals can schedule appointments at the Service Center with the consultant staff.

### *SPECIAL INTEREST MEETINGS*

Group meetings are facilitated to provide networking, information sharing, and training opportunities. These meetings are grouped by specific adult education categories.

### *NEWSLETTER/PUBLICATIONS*

A quarterly newsletter published with practical, current, and relevant topics is distributed to adult educators. Publications developed at the Service Center are available to all adult education staff.

### *LIBRARY MATERIALS*

Reference books, student and teacher texts, audio and video cassettes and periodicals are available for use in the library or through loan. Materials circulate for one month.

Des Plaines Site Library Hours:
9:30 am-5:30 pm M, W, Th, F
9:30 am-7:00 pm T
9:30 am-1:30 pm Second Saturday of each month

### *COMPUTER SOFTWARE CENTER*

Computer software programs for Adult Education use are available for preview at the Des Plaines site.

### ILLINOIS ADULT LEARNING HOTLINE

**1-800-321-9611**
(1-800-SAY GET IT)

The Hotline provides referral services for students, volunteers and employers to access adult education and literacy programs throughout Illinois.

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*For more information, to request services, or to receive Service Center announcements and publications, please call:*

Sue Barauski
(708) 803-3535


ADULT EDUCATION SERVICE CENTER OF NORTHERN ILLINOIS

**Adult Learning Resource Center**
**1855 Mt. Prospect Road**
**Des Plaines, IL 60018**
**/ (708) 803-3535**
**Fax (708) 803-3231**

**Adult Learning Resource Center-Chicago**
**(Service available by appointment only)**
**28 E. Jackson Blvd., Suite 1520**
**Chicago, IL 60604**
**For appointment call (708) 803-3535**

## ADULT LEARNING RESOURCE CENTER
### PUBLICATION PRICE LIST

The following publications are available from the Adult Learning Resource Center. Please make checks payable to: ALRC-CCSD #54. Add postage indicated in parentheses.

| | | Publication (Postage) |
|---|---|---|
| 1. | Adult ESL Suggested Materials List. (Annotated) Rose DiGerlando, et al. September, 1990. | $ 8.50 (2.50) |
| 2. | *A Guide for Conducting an Instructional Process Evaluation of English as a Second Language Programs for Adults. Joanna Sculley Escobar and John Daugherty. October, 1975. | 7.00 (0.50) |
| 3. | *An Adult ESL Literacy Resource Guide. Jeffrey P. Bright, et al. November, 1982. | 5.00 (2.00) |
| 4. | English in the Workplace. TESL Talk, Volume 13, No. 14, Fall, 1982. | 6.00 (2.00) |
| 5. | Legalization and Citizenship Materials: A Selected Bibliography. August, 1988. | 5.00 (1.00) |
| 6. | Home English Literacy for Parents: An ESL Family Literacy Curriculum. September, 1989. | 9.00 (3.00) |
| 7. | Spanish Skills Placement Test (Literacy Level - pre GED). Winter, 1991. | 5.00 (1.00) |
| 8. | Correlation Study of Adult English as a Second Language (ESL) and Adult Basic Education (ABE) Reading Tests. March, 1991. | 8.00 (2.00) |
| 9. | Teachers, Tools, and Techniques: A Handbook for Adult Basic Education and GED Instruction. March, 1992. | 8.00 (3.00) |
| 10. | Limited English Proficient (LEP) Parent Involvement Project Modules. Parent Materials and User's Guide, Minnesota Department of Education, Fall, 1991. The User's Guide and Modules 1-4 are available in English. Modules 1-3 are available in Spanish, Cambodian, Laotian, Vietnamese and Hmong. When ordering please indicate language. | 3.50 (2.50) |

* These publications can also be ordered from: Curriculum Publications Clearinghouse
Western Illinois University
Horrabin Hall 47
Macomb, IL 61455

ALRC: Adult Education Service Center of Northern Illinois and Illinois ESL Adult Education Service Center. Special 353 project grants from the Illinois State Board of Education, Department of Adult Vocational and Technical Education, Adult Education and Literacy Section.

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Adult Learning Resource Center
1855 Mt. Prospect Road
Des Plaines, IL 60018

Thank you for your order.